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ABSTRACT

This report has been published in two volumes (combined here). Volume One (162 pages) is a summary report, repeating part 1 of the complete report, selected appendices, and the index to the list of objectives. Volume Two (700 pages) is the complete report, including all appendices. This report provides a strategy for significantly improving the health of the nation during the 1990s. The document identifies 300 specific health objectives in 22 priority areas such as fitness, nutrition, tobacco, maternal and infant health, cancer, cardiovascular disease, human immunodeficiency virus (HIV), immunization, and environmental health. It also focuses on high-risk populations and age groups. The report is divided into 2 parts: Part 1, entitled "Healthy People 2000," contains 6 sections (an introduction, age groups, special populations, goals for the nation, priorities for health promotion and disease prevention, and shared resposibilities) and 3 appendixes (lists of objectives, contributors, and lead agencies); Part 2, "National Health Promotion and Disease Prevention Objectives," contains 6 sections (health promotion, health protection, preventive services, surveillance and data systems, age-related objectives, and special population objectives) and appendixes on mortality objectives and recommendations of the U.S. Preventive Services task force. Educators can choose from the objectives to address their highest health priorities for children. Some examples of education related goals are: children's health; child development; and developmental problems. (LL)

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HEALTHY PEOPLE 2000

National Health Promotion and Disease Prevention Objectives

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HEALTHY PEOPLE 2000

National Health Promotion and Disease Prevention Objectives

U.S. Department of Health and Human Services
Public Health Service

Healthy People 2000 *is a statement of national opportunities. Although the Federal Government facilitated its development, it is not intended as a statement of Federal standards or requirements. It is the product of a national effort, involving 22 expert working groups, a consortium that has grown to include almost 300 national organizations and all the State health departments, and the Institute of Medicine of the National Academy of Sciences, which helped the U.S. Public Health Service to manage the consortium, convene regional and national hearings, and receive testimony from more than 750 individuals and organizations. After extensive public review and comment, involving more than 10,000 people, the objectives were revised and refined to produce this report.*

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Office of the Assistant Secretary
for Health
Washington DC 20201

The Honorable Louis W. Sullivan
Secretary of Health and Human Services

Dear Mr. Secretary:

I am pleased to submit to you *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. This document contains a national strategy for significantly improving the health of the Nation over the coming decade. It addresses the prevention of major chronic illnesses, injuries, and infectious diseases.

The Public Health Service has served as leader, convener, and facilitator over the three-year period of this report's development. However, it can truly be labelled a national, not just a Federal, initiative to focus existing knowledge, resources, and commitment to capitalize on our opportunities to prevent premature death and needless disease and disability. Thousands of professionals from many different disciplines, as well as many health advocates and consumers, have contributed substantially to produce this set of measurable targets to be achieved by the year 2000. They have voluntarily testified at public hearings, written eloquent letters and papers, engaged in extensive reviews of draft materials, and organized and attended informational forums in support of *Healthy People 2000*. The comprehensiveness and depth of this report stand as a tribute to their commitment to better health for Americans through prevention. In addition to their contribution, Federal staff from other departments, other Operating Divisions of this Department, and the Public Health Service Agencies, have worked above and beyond the call of duty to produce this national prevention strategy. The Institute of Medicine of the National Academy of Sciences has served as an important partner in our efforts to involve a broad consortium of participants in the process. Each deserves a special note of appreciation.

I commend *Healthy People 2000* to you and through you to the American people. This set of objectives for the year 2000 makes an important, compelling point to us and to all health policy makers: we can no longer afford *not* to invest in prevention. From the perspective of avoiding human suffering as well as saving wasteful costs for treating diseases and injuries that could have been prevented, the 1990s should be the decade of prevention in the United States.

With the submission of *Healthy People 2000*, I commit the Public Health Service to work toward achievement of these objectives for the coming decade.

Sincerely yours,

James O. Mason

James O. Mason, M.D., Dr.P.H.
Assistant Secretary for Health

Enclosure

Foreword

Americans today are taking a more active interest in their health than ever before. They are coming to realize the influence that they, themselves, can have on their own health destinies and on the overall health status of the Nation.

It wasn't always thus. Until fairly recently, we Americans gave little thought to health as a positive concept. The past 15 years or so, however, have witnessed important changes in our thinking about the protection and enhancement of personal health. Three of those changes are of great importance for the well-being of our people as we move into the final decade of this century.

First, personal responsibility, which is to say responsible and enlightened behavior by each and every individual, truly is the key to good health. Evidence of this still-evolving perspective abounds in our concern about the dangers of smoking and the abuse of alcohol and drugs; in the emphasis that we are placing on physical and emotional fitness; in our growing interest in good nutritional practices; and in our concern about the quality of our environment. We have become, in a word, increasingly health-conscious, increasingly appreciative of the extent to which our physical and emotional well-being is dependent upon measures that only we, ourselves, can affect.

We can control our health destinies in significant ways, then, but if we are to realize, fully, the benefits of assuming that control, and this is the second of the three points I would make, we must find the means of extending the benefits of good health to the most vulnerable among us.

The correlation between poor health and lower socio-economic status has been well documented, but that does not make it right or inevitable. Good health should not be seen, or, for that matter, be permitted to exist in fact, as a benefit for only those who can afford it; it should be available and accessible to every citizen.

Medical care, alone, will not eliminate the devastating impact of chronic disease on the disadvantaged, nor will it reduce, as much as we would like, the rate of infant mortality or the burden of homicide and violence or any of the other "health" problems that are borne by the poor in our society. If we are to extend the benefits of good health to all our people, it is crucial that we build in our most vulnerable populations what I have called a "culture of character," which is to say a culture, or a way of thinking and being, that actively promote responsible behavior and the adoption of lifestyles that are maximally conducive to good health. This is "prevention" in the broadest sense. It is also an absolute necessity, both because we are a humane and caring society and because, if we are to remain a vital society, we cannot afford to waste human resources. Good health must be an equal opportunity, available to all Americans.

Finally, health promotion and disease prevention comprise perhaps our best opportunity to reduce the ever-increasing portion of our resources that we spend to treat preventable illness and functional impairment. Smoking, for example, is the single most preventable cause of death and illness in this country. Smoking-related illnesses cost our health care system more than $65 billion annually.

AIDS is an almost entirely preventable disease. The cost of caring for a person with AIDS for his or her lifetime is, today, about $75,000. The annual cost of treating all diagnosed AIDS patients, about $4.3 billion this year, could climb as high as $13 billion by 1992, the Public Health Service estimates.

The yearly cost of treating alcohol and drug abuse is at least $16 billion. The total economic impact of alcohol and drug abuse, including not only treatment but premature death, accidents, crime, and lost productivity, is more than $110 billion annually.

We would be terribly remiss if we did not seize the opportunity presented by health promotion and disease prevention to dramatically cut health-care costs, to prevent the premature onset of disease and disability, and to help all Americans achieve healthier, more productive lives.

Healthy People 2000: National Health Promotion and Disease Prevention Objectives addresses these three points. It lays out a series of national opportunities. To support the development of these opportunities, a national consortium composed of nearly 300 national membership organizations and all of the State health departments joined the Department's Public Health Service to solicit and analyze comments and suggestions from people across the Nation. The Federal Departments of Agriculture, Defense, Education, Interior, Labor, and Transportation and the Environmental Protection Agency participated generously in the development of the national objectives. In regional and national hearings, the Public Health Service and its partner in this venture, the Institute of Medicine of the National Academy of Sciences, learned what people from many sectors of society consider to be the priorities for prevention in the coming decades.

This input has shaped the content of *Healthy People 2000* as it has evolved from its first drafts through extensive public review and comment to the final publication. Participants included health professionals and others in health-related industries. The Department has had the honor of serving as a convener and facilitator in developing these goals, but they truly belong to the Nation.

I commend this document for your consideration, to use as appropriate in your community. All those who participated in its development over the past three years can take pride in its clarity of vision. All of us can feel humility in the face of its monumental challenges, but we also can share a new sense of resolve to move forward to achieve a nation of healthy people.

Louis W. Sullivan, M.D.
Secretary

September 1990

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Acronyms and Abbreviations

ADAMHA	Alcohol, Drug Abuse, and Mental Health Administration
AHCPR	Agency for Health Care Policy and Research
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control
DOD	Department of Defense
DoEd	Department of Education
DOI	Department of the Interior
DOL	Department of Labor
DOT	Department of Transportation
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FSA	Family Support Administration
HCFA	Health Care Financing Administration
HRSA	Health Resources and Services Administration
IHS	Indian Health Service
NIH	National Institutes of Health
OHDS	Office of Human Development Services
PHS	Public Health Service
SSA	Social Security Administration
USDA	Department of Agriculture

Part I

Healthy People 2000

Contents

1. Introduction
2. The Nation's Health: Age Groups
3. The Nation's Health: Special Populations
4. Goals for the Nation
5. Priorities for Health Promotion and Disease Prevention
6. Shared Responsibilities

1. Introduction

The year 2000 appears ahead on the calendar of our Nation's history as a turning point. It may well be like any other year in the ongoing lives of people who inhabit this country and the world. But from the perspective of history, the year 2000 will bring to its conclusion a tumultuous century, characterized by astounding scientific achievements, devastating world wars, and explosive population growth. It will inaugurate at once a new century and a new millennium, a future so vast in its human and historic dimensions that it defies prediction while posing momentous questions about social and economic viability and human vitality in the face of a new era.

The year 2000 connotes change. Its arrival contains enough power to shape that change, motivating actions that can improve American lives. The beginning of the twenty-first century beckons both with challenge and opportunity for improved health of Americans. We began the current century with a sense of fatalism about the Nation's health problems. As we reach its conclusion, we do so with confidence in our ability to control many of the events that form our health prospects. A century of biomedical research has made available sophisticated techniques for diagnosing and intervening against disease. Scientific studies of even the last generation have revealed much about the factors that predispose to various health threats and therefore about actions that each of us can take to control our risks for disease or disability.

We have learned that a fuller measure of health, a better quality of life, is within our personal grasp. If tobacco use in this country stopped entirely today, an estimated 390,000 fewer Americans would die before their time each year. If all Americans reduced their consumption of foods high in fat to well below current levels and engaged in physical activity no more strenuous than sustained walking for 30 minutes a day, additional results of a similar magnitude could be expected. If alcohol were never carelessly used in our society, about 100,000 fewer people would die from unnecessary illness and injury. Together, deaths from these causes comprise a sizable share of the 2.1 million deaths that occur annually and are examples of the impact of personal lifestyle choices on the health destiny of individual Americans and the future of the Nation.

New knowledge has brought with it both a keen sense of potential and a keen appreciation of how far most Americans, especially those with low incomes, are from that potential. Moreover, we are already feeling the effects of momentous new issues emerging on the horizon—the aging of our society, the prohibitive costs of many of the technologies developed for diagnosing and treating disease, and the ecologic consequences of industrialization and population growth.

These problems compel careful engagement on the national agenda. This report frames the elements of that agenda from the perspective of the potential to prevent unnecessary disease and disability and to achieve a better quality of life for all Americans. It grows out of a health strategy initiated in 1979 with the publication of *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*[7] and expanded with publication in 1980 of *Promoting Health/Preventing Disease: Objectives for the Nation*[8], which set out an agenda for the ten years leading up to 1990.

Healthy People 2000 offers a vision for the new century, characterized by significant reductions in preventable death and disability, enhanced quality of life, and greatly reduced disparities in the health status of populations within our society. It is the product of a national effort, involving professionals and citizens, private organizations and public agencies from every part of the country. Work on the report began in 1987 with the convening of a consortium that has grown to include almost 300 national membership organizations and all the State health departments (see Appendix B). The Healthy People 2000 Consortium, facilitated by the Institute of Medicine of the National Academy of Sciences, helped the United States Public Health Service to convene 8 regional hearings and received testimony from over 750 individuals and organizations. This testimony became the primary resource material for working groups of professionals to use in crafting the health objectives. After extensive public review and comment, involving more than 10,000 people, the objectives were refined and revised to produce this report.

This report does not reflect the policies or opinions of any one organization, including the Federal government, or any one individual. It is the product of a national process. It is deliberately comprehensive in addressing health promotion and disease prevention opportunities in order to allow local communities and States to choose from among its recommendations in addressing their own highest priority needs.

The Year 2000: A Profile of The American People

Over the course of the 1990s, the profile of the American population will change. Barring unforeseeable major events, the demographic contrasts between 1990 and 2000 will be evident, if not dramatic. Based on the best available information:

- By the year 2000, the overall population of the United States will have grown about 7 percent to nearly 270 million people, with the slowest rate of growth in the Nation's history projected between 1995 and 2000.[12] Average household size is expected to decline from 2.69 in 1985 to 2.48 in 2000, with husband-wife households decreasing from 58 to 53 percent of all households.[1]
- By the year 2000, the American population will be older, continuing the aging trend of the present century, with a median age of more than 36 years, compared to 29 years in 1975. The number of children under age 5 will actually decline from more than 18 million to fewer than 17 million between 1990 and 2000. By 2000, the 35 million people over age 65 will represent about 13 percent of the population, in contrast to 8 percent in 1950. The population of the "oldest old"—those over age 85—will have increased by about 30 percent to a total of 4.6 million by 2000.[12]
- By the year 2000, the racial and ethnic composition of the American population will form a different pattern. Whites, not including Hispanic Americans, will represent a smaller proportion of the total, declining from 76 to 72 percent of the population. One particularly fast-growing population group will be Hispanics, some estimates forecasting a rise from 8 to 11.3 percent, to more than 31 million Hispanic people by 2000. Blacks will increase their proportion from 12.4 to 13.1 percent. Other racial groups, including American Indians and Alaska Natives and Asians and Pacific Islanders, will increase from 3.5 to 4.3 percent of the total.[11,12]
- By the year 2000, economic expansion will create up to 18 million new jobs, but the number of young job seekers will decline due to a shift in birth rates. Reflecting changes in racial and ethnic populations, the entry rate of blacks, Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives into the workforce will be higher than for whites. Women of all racial and ethnic groups will be the major source of new entrants into the labor force, comprising 47 percent of the total workforce by 2000, compared to 45 percent in 1988. Half of women in the workforce will be between the ages of 35 and 54, a shift from 1986 when the majority were between 25 and 44. Between 1988 and the year 2000, white men will comprise only 25 percent of the net growth of the labor force.[4] Occupations most likely to grow include service, professional, technical, sales, and executive and management positions.

- By the year 2000, the American population may increase by up to 6 million people through immigration. Certain States and cities, especially those on the east and west coasts, can be expected to receive a disproportionately large number of these immigrants.[6]

While 10 years in the history of a nation seems a comparatively short time, it is long enough to alter population patterns in ways that are of great importance to current and future decision-makers seeking to design an effective program of health promotion and disease prevention. Informed estimates about the changes in households and family constellations, age groups, racial and ethnic populations, the workforce, and immigration can provide a context that is crucial to decisions and programs to achieve a nation of healthy people.

Promoting Health and Preventing Disease: Progress

Ten years is also long enough to bring about marked changes in the Nation's health (Fig. 1.1). During the 1980s, there were major declines in death rates for three of the leading causes of death among Americans: heart disease, stroke, and unintentional injuries. Infant mortality also decreased, and some childhood infectious diseases were nearly eliminated. Gains in these areas give hope that the 1990s will see more progress, especially for diseases such as cancer that have so far not declined.

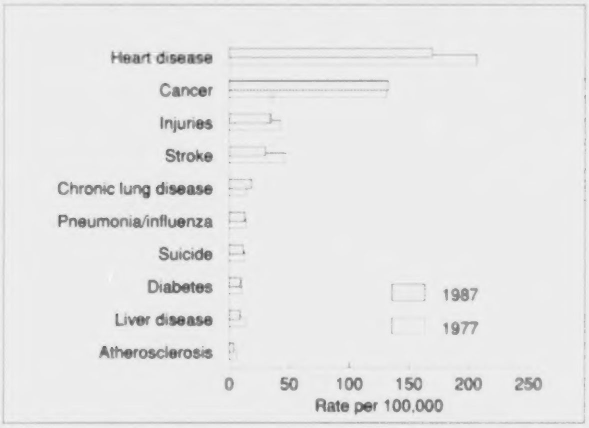

Fig. 1.1

Leading causes of death, U.S. population (age-adjusted)

Source: *Health, United States, 1989 and Prevention Profile* and National Center for Health Statistics (CDC)

Much of our progress mirrors reductions in risk factors. The more than 40-percent drop in heart disease mortality since 1970 reflects dramatic increases in high blood pressure detection and control, a decline in cigarette smoking, and increasing awareness of the role of blood cholesterol and dietary fats. The precipitous drop in stroke death rates—over 50 percent in the same period—also reflects gains in hypertension control and declines in smoking.

Unintentional injuries have declined. In the last decade and a half, traffic fatalities dropped by one-third, partly reflecting increased use of seatbelts, lower speed limits, and declines in alcohol abuse. Recent reductions in fatal occupational injuries have been facilitated by enhanced occupational safety standards. Studies are beginning to yield promising approaches to alcohol and other drug problems.

Progress has been made in the health status of children as well. In 1987, we achieved a record low rate of 10.1 infant deaths per 1,000 live births.[5] Although still higher than rates in many other developed countries, this figure represents a 65-percent decline since 1950. Preventable childhood diseases, such as mumps, measles, and rubella, are now unusual in this country due to widespread use of vaccines. Immunization levels among school children exceed 95 percent for most of these diseases.

In other areas, progress is mixed. Lung cancer deaths have increased steadily since 1960, although rates among men aged 50 and younger began to turn around in the 1980s, a sign that changes in smoking patterns are beginning to have an effect. Breast cancer death rates remain stubbornly high, as they have for 35 years, despite the fact that early detection and treatment could reduce deaths due to breast cancer by an estimated 30 percent.[10] For cervical cancer, the widespread use of Pap tests has contributed to a 73-percent reduction in death rates from the disease since 1950.

Changing trends point to still other areas that require attention. In the past decade, rising rates of syphilis and the emergence of HIV infection point to the need for new strategies to address these public health problems. Air and water quality have improved since the Environmental Protection Agency and the States began regulating them in the early 1970s. However, the last decade has seen increasing concern expressed by individuals, communities, and public agencies about toxic substances, solid waste, and global environmental change.

When taken together, the progress of the last ten years has brought the Nation a considerable distance toward the health goals set forth in *Healthy People* in 1979. That report targeted for the year 1990 a 35-percent reduction in infant mortality, a 20-percent reduction in death rates for children aged 1 through 14, a 20-percent reduction in death rates for adolescents and young adults aged 15 through 24, and a 25-percent reduction in death rates for adults aged 25 through 64. For older adults, aged 65 and older, the target was a 20-percent reduction in days of disability. Figure 1.2 summarizes progress toward these goals, as of the most recent year for which data are available.

Life Stage	*1990 Target**	*1987 Status*
Infants	35% lower death rate	28% lower
Children	20% lower death rate	21% lower
Adolescents/ Young Adults	20% lower death rate	13% lower
Adults	25% lower death rate	21% lower
Older Adults	20% fewer days of restricted activity	17% lower

* Relative to baseline (1977 data)

Fig. 1.2

Progress toward 1990 life stage goals—1987

Source: *Health, United States, 1989 and Prevention Profile*

A more detailed record of national efforts in health promotion and disease prevention is provided by tracking progress toward achievement of the 226 measurable objectives that were laid out in *Promoting Health/Preventing Disease: Objectives for the Nation* in 1980—objectives established to achieve the broad goals of *Healthy People*. As of 1987, it appeared that nearly half of the objectives had been achieved or were well on their way toward achievement by 1990; about one-quarter appeared unlikely to be achieved; and the status of the other quarter was uncertain because data were unavailable for tracking their progress.[5] Among the 15 priority areas that were the focus of the 1990 objectives, areas in which progress seemed to lag included pregnancy and infant health, nutrition, physical fitness and exercise, family planning, sexually transmitted diseases, and occupational safety and health. On the other hand, priority areas related to high blood pressure control, immunization, control of infectious diseases, unintentional injury prevention and control, smoking, and alcohol and drugs showed substantial progress.[5]

Healthy People: The Economics of Prevention

Despite the overall health improvements achieved as a result of preventive interventions, the Nation continues to be burdened by preventable illness, injury, and disability. In 1960, the share of the Gross National Product (GNP) going to medical services was 5 percent. It is estimated to reach nearly 12 percent in 1990.[2] Lost economic productivity attendant to illness and early death compounds the impact of this problem, so that in 1980 the total costs of illness equalled nearly 18 percent of GNP. Injury alone now costs the Nation well over $100 billion annually, cancer over $70 billion, and cardiovascular disease $135 billion.[3,9]

Sophisticated technology for the diagnosis and treatment of disease conditions has outstripped society's ability to pay for it. But many of these expenses are avoidable (Fig. 1.3). Coronary artery disease affects approximately 7 million Americans and causes about 1.5 million heart attacks and 500,000 deaths a year. The number of coronary

Fig. 1.3

Costs of treatment for selected preventable conditions

Condition	*Overall magnitude*	*Avoidable intervention*[1]	*Cost per patient*[2]
Heart disease	7 million with coronary artery disease 500,000 deaths/yr 284,000 bypass procedures/yr	Coronary bypass surgery	$30,000
Cancer	1 million new cases/yr 510,000 deaths/yr	Lung cancer treatment	$29,000
		Cervical cancer treatment	$28,000
Stroke	600,000 strokes/yr 150,000 deaths/yr	Hemiplegia treatment and rehabilitation	$22,000
Injuries	2.3 million hospitalizations/yr 142,500 deaths/yr 177,000 persons with spinal cord injuries in the United States	Quadriplegia treatment and rehabilitation	$570,000 (lifetime)
		Hip fracture treatment and rehabilitation	$40,000
		Severe head injury treatment and rehabilitation	$310,000
HIV infection	1-1.5 million infected 118,000 AIDS cases (as of Jan 1990)	AIDS treatment	$75,000 (lifetime)
Alcoholism	18.5 million abuse alcohol 105,000 alcohol-related deaths/yr	Liver transplant	$250,000
Drug abuse	Regular users: 1-3 million, cocaine 900,000, IV drugs 500,000, heroin Drug-exposed babies: 375,000	Treatment of drug-affected baby	$63,000 (5 years)
Low birth weight baby	260,000 LBWB born/yr 23,000 deaths/yr	Neonatal intensive care for LBWB	$10,000
Inadequate immunization	Lacking basic immunization series: 20-30%, aged 2 and younger 3%, aged 6 and older	Congenital rubella syndrome treatment	$354,000 (lifetime)

[1] Examples (other interventions may apply).

[2] Representative first-year costs, except as noted. Not indicated are nonmedical costs, such as lost productivity to society.

Source: Data compiled from various sources by the Office of Disease Prevention and Health Promotion bypass procedures performed each year is approaching 300,000, each *one* of these procedures at a cost of approximately $30,000. A representative cost for treating a single case of lung cancer is $29,000 and $28,000 for invasive cervical cancer. A liver transplant for alcoholic cirrhosis can cost $250,000 or more. The lifetime treatment costs per patient are $570,000 for quadriplegia from a spinal cord injury, $354,000 for congenital rubella syndrome, and $75,000 for Acquired Immunodeficiency Syndrome (AIDS). Yet virtually all of these conditions are preventable. Mobilizing the considerable energies and creativity of the Nation in the interest of disease prevention and health promotion is an economic imperative.

Healthy People 2000: The Challenge and Goals

The Nation has within its power the ability to save many lives lost prematurely and needlessly. Implementation of what is already known about promoting health and preventing disease is the central challenge of *Healthy People 2000*. But *Healthy People 2000* also challenges the Nation to move beyond merely saving lives. The health of a people is measured by more than death rates. Good health comes from reducing unnecessary suffering, illness, and disability. It comes as well from an improved quality of life. Health is thus best measured by citizens' sense of well-being. The health of a Nation is measured by the extent to which the gains are accomplished for all the people.

The challenge of *Healthy People 2000* is to use the combined strength of scientific knowledge, professional skill, individual commitment, community support, and political will to enable people to achieve their potential to live full, active lives. It means preventing premature death and preventing disability, preserving a physical environment that supports human life, cultivating family and community support, enhancing each individual's inherent abilities to respond and to act, and assuring that all Americans achieve and maintain a maximum level of functioning.

The purpose of *Healthy People 2000* is to commit the Nation to the attainment of three broad goals that will help bring us to our full potential (Fig. 1.4). We have a broad array of opportunities to achieve our goals. This report presents many of these opportunities in the form of measurable targets, or objectives, to be achieved by the year 2000, organized into 22 priority areas. The first 21 of these areas are grouped into three broad categories: health promotion; health protection; and preventive services (Fig. 1.5).

- **Increase the span of healthy life for Americans**
- **Reduce health disparities among Americans**
- **Achieve access to preventive services for all Americans**

Fig. 1.4

Healthy People 2000 Goals

Health promotion strategies are those related to individual lifestyle—personal choices made in a social context—that can have a powerful influence over one's health prospects. These priorities include physical activity and fitness, nutrition, tobacco, alcohol and other drugs, family planning, mental health and mental disorders, and violent and abusive behavior. Educational and community-based programs can address lifestyle in a crosscutting fashion.

Health protection strategies are those related to environmental or regulatory measures that confer protection on large population groups. These strategies address issues such as unintentional injuries, occupational safety and health, environmental health, food and drug safety, and oral health. Interventions applied to address these issues are generally

Health Promotion

1. Physical Activity and Fitness
2. Nutrition
3. Tobacco
4. Alcohol and Other Drugs
5. Family Planning
6. Mental Health and Mental Disorders
7. Violent and Abusive Behavior
8. Educational and Community-Based Programs

Health Protection

9. Unintentional Injuries
10. Occupational Safety and Health
11. Environmental Health
12. Food and Drug Safety
13. Oral Health

Preventive Services

14. Maternal and Infant Health
15. Heart Disease and Stroke
16. Cancer
17. Diabetes and Chronic Disabling Conditions
18. HIV Infection
19. Sexually Transmitted Diseases
20. Immunization and Infectious Diseases
21. Clinical Preventive Services

Surveillance and Data Systems

22. Surveillance and Data Systems

Age-Related Objectives

Children
Adolescents and Young Adults
Adults
Older Adults

Fig. 1.5

Healthy People 2000 Priority Areas

not exclusively protective in nature—there may be a substantial health promotion element as well—but the principal approaches involve a communitywide rather than individual focus.

Preventive services include counseling, screening, immunization, or chemoprophylactic interventions for individuals in clinical settings. Priority areas for these strategies include maternal and infant health, heart disease and stroke, cancer, diabetes and chronic disabling conditions, HIV infection, sexually transmitted diseases, and infectious diseases. Crosscutting professional and access considerations in the delivery of clinical preventive services are also addressed.

A special category has been established for surveillance and data systems. Given the centrality of monitoring progress toward the stated targets in the overall approach of *Healthy People 2000*, the integrity of our data collection efforts at every level is critical. Objectives have therefore been established to improve those efforts.

Finally, because issues and approaches vary by age, chapters are included for each of four age groups: children, adolescents and young adults, adults, and older adults. Objectives related to each of these age groups are found throughout the priority areas. To give them special emphasis, some of the key targets have been collected and presented according to these four ages.

The full set of objectives with commentary is presented as Part II of *Healthy People 2000*. The material presented here in Part I defines the overall national agenda and outlines goals, objectives, and strategies for change. Chapter 2 of Part I reviews the challenges for people in various age groups. Chapter 3 addresses high risk populations. Chapter 4 presents the broad goals. Chapter 5 gives synopses of each of the priority areas with selected examples of the objectives addressed. Chapter 6 reviews the challenge for implementation for various groups throughout the Nation.

The last chapter deserves special comment. *Healthy People 2000* uses the three approaches of health promotion, health protection, and preventive services as organizing categories, but running through the priority areas and the objectives is a common theme of shared responsibility for carrying out this national agenda. Achievement of the agenda depends heavily on changes in individual behaviors. It requires use of legislation, regulation, and social sanctions to make the social and physical environment a healthier place to live. It calls on medical and health professionals to prevent, not just to treat, the diseases and conditions that result in premature death and chronic disability. All are necessary. None is sufficient alone to achieve *Healthy People 2000*'s goals and objectives.

The challenge spelled out in *Healthy People 2000* calls upon communities to translate national objectives into State and local action. To accomplish this, a new edition of Model Standards—*Healthy Communities 2000: Model Standards, Guidelines for Attainment of Year 2000 Objectives for the Nation*—provides a flexible planning tool to enable communities to share in the various efforts necessary to attain these objectives. The volume covers the priority areas of *Healthy People 2000* and includes all of the national objectives that call for action at the community level. It offers community implementation strategies for putting the objectives of *Healthy People 2000* into practice and encourages communities to establish achievable community health targets.

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2. The Nation's Health: Age Groups

Responding effectively to the health challenges of the 1990s will require a clear understanding of the health-related threats and opportunities facing all Americans. One way to grasp the dimensions and the realities of the tasks laid out in this report is to consider the special problems of infants, children, adolescents and young adults, adults, and older adults. The health profiles of these age groups can help us remember that the improvements envisioned here are not generalizations about the population, but prescriptions for healthier lives for each of us—newborn babies, boys and girls, teenagers and young people, women and men, and people in their later years.

Infants

One of the most heartening indicators of our Nation's improvement in health during the 20th century has been the steady decline in the infant mortality rate. Between 1950 and 1987, the infant mortality rate in the United States dropped from 29.2 per 1,000 live births to 10.1. Eight years after *Healthy People* (1979) posed the challenge of a 35-percent reduction in infant mortality by 1990, we had achieved a reduction of 28 percent in that rate.[38]

Yet comparison of even our 1987 rate of infant mortality with that of other industrialized nations demonstrates the continued importance of efforts in this regard. Moreover, the continuing disparities between minority and majority populations represent a major health challenge. In 1987, the mortality rate for black infants was still over twice that of whites, and rates for some American Indian tribes and for Puerto Ricans were also considerably higher than for white infants.[38]

Infant mortality rates provide a summary measure of the effects of major health threats to the developing fetus and newborn baby. But for every 10 babies who die, 990 live. Some of those who live have been harmed, often permanently, by unhealthy beginnings. The quality, not just the quantity, of their lives is a function of health during both the prenatal and infant periods.

Technology has contributed significantly to the improved prospects for infant survival over the past several decades. Neonatal intensive care, new surgical techniques, and other medical interventions save lives and even overcome conditions that formerly guaranteed life-long disability. But opportunities for primary prevention offer new frontiers for improving infant health in the coming years. Some opportunities will result from breakthroughs in understanding the genetic origins of human diseases; most will be in areas of personal lifestyle and use of existing health interventions.

Major Health Concerns

No period of life is more important to good health than the months before birth. The prenatal period can be the starting time for good health or it may be the beginning of a lifetime of illness and shortened life expectancy. Each year in the United States, nearly 39,000 babies—about 1 percent of those born—die before the age of one, two-thirds during their first month.[38] Four causes account for more than half of all infant deaths: disorders relating to low birth weight, congenital anomalies, sudden infant death syndrome (SIDS), and respiratory distress syndrome (Fig. 2.1).

Low birth weight (less than 2,500 grams) occurs in about 7 percent of all live births and is the greatest single hazard to infant health.[38] This dangerous condition has been linked to several preventable risks, including lack of prenatal care, maternal smoking, use of

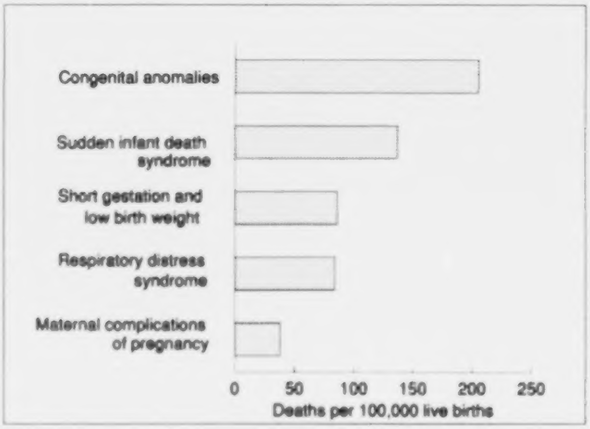

Fig. 2.1

Leading causes of infant mortality (1987)

Source: *Health, United States, 1989 and Prevention Profile*

alcohol and other drugs, and pregnancy before age 18. Approximately three-quarters of deaths in the first month and 60 percent of all infant deaths occurred among low-birth-weight infants. Low socioeconomic and educational levels are often associated with low birth weight. Black infants are more than twice as likely as white babies to be born weighing less than 2,500 grams.[38]

Very low birth weight (less than 1,500 grams) is associated with 40 percent of all infant deaths. Very low birth weight declined slightly from 1970 to 1981 but rose by about 0.9 percent per year from 1981 to 1986.[38] Low-birth-weight babies are nearly twice as likely to have severe developmental delay or congenital anomalies.[68] These babies are also at a significantly greater risk of such long-term disabilities as cerebral palsy, autism, mental retardation, and vision and hearing impairments, and other developmental disabilities.

Congenital anomalies (birth defects) most likely to be lethal include malformations of the brain and spine, heart defects, and combinations of several malformations. Infant mortality from congenital anomalies has been declining, although the last decade has seen slight increases in the incidence of some birth defects. In 1985, about 11,000 babies were born with moderate to severe impairments.[40] Congenital anomalies, when they do not result in death, may cause disability. One-fourth of all congenital anomalies are caused by genetic factors, suggesting a need for preconception genetic counseling for both men and women. Environmental hazards and alcohol use during pregnancy are other important factors. Fetal alcohol syndrome (FAS) affects as many as 1 to 3 infants per 1,000 live births.[38] In some populations, the incidence is higher. A similar syndrome has been observed in babies born to drug-addicted mothers.

After the first month of life, sudden infant death syndrome (SIDS) is the leading cause of infant mortality, accounting for about one-third of all deaths in this period.[59] The causes of SIDS are not known, but risk factors include maternal smoking and drug use, teenage birth, and infections late in pregnancy. Infants born to families with a history of SIDS are also at risk.

Respiratory distress syndrome occurs primarily in premature babies whose lungs are not fully developed. Therefore, risk factors for respiratory distress syndrome include those for prematurity.

Increasing rates of HIV infection and cocaine addiction in newborns are also of concern. By January 1990, more than 2,000 babies had been born with HIV infection, and some hospitals from urban communities reported rates of cocaine-addicted babies as high as 20 percent.[14] The long term consequences of these alarming trends are inestimable.

Maternal Factors

Several major maternal risk factors are associated with low birth weight, as well as with other major causes of infant death and disability, including:

- Cigarette smoking;
- Alcohol and other drug use;
- Age;
- Nutrition;
- Socioeconomic status;
- Environmental hazards.

An estimated 25 percent of pregnant women smoke throughout their pregnancies.[66] There is some evidence that pregnant women are quitting smoking and that smoking prevalence during pregnancy is decreasing for some but not all groups. Women in the lowest age and socioeconomic groups have the highest likelihood of smoking during pregnancy.[32] Maternal cigarette smoking has been linked with from 20 to 30 percent of all low-birth-weight births in the United States.[33] If all pregnant women refrained from smoking, fetal and infant deaths would be reduced by approximately 10 percent, saving about 4,000 infants per year.

Heavy alcohol consumption during pregnancy is associated with increased risk for fetal alcohol syndrome, including growth retardation, facial malformations, mental retardation, and central nervous system dysfunctions. A safe amount of alcohol consumption during pregnancy has not been documented; however, adverse effects are associated primarily with heavy consumption during the early months of pregnancy.

The effects of maternal drug use on pregnancy outcome have not been fully explored. Studies of the effects of maternal drug abuse are hampered by difficulties in distinguishing effects of drug exposure from those resulting from inadequate prenatal care or poor maternal health and nutrition. However, low birth weight and prematurity are the most serious known consequences of maternal illicit drug use. Risks due to maternal drug abuse are heightened by lack of prenatal care. Between 50 and 75 percent of substance-abusing women receive little or no prenatal care.[30] Reliable data on the prevalence of substance abuse by pregnant women is also difficult to obtain. Extrapolations of local studies suggest that mothers of as many as 10 percent of babies born each year have used one or more illicit substances during their pregnancy.[14,15,25]

Both pregnant women and newborn infants are particularly vulnerable to poor nutrition. Women who gain less than 21 pounds during pregnancy are more than twice as likely to deliver low-birth-weight infants than those who gain more.[71] Nutrition is also vital to growth and development of infants, including brain function. For most mothers, breastfeeding is an ideal way of nurturing their infants.

Maternal age is a risk factor at both ends of the childbearing years: under age 17 and over age 40. Teenage women, more than a million of whom become pregnant each year in the United States, are at particular risk of having low-birth-weight babies.[58] Birth rates for women aged 15 through 19 are virtually unchanged since 1980, remaining at more than 50 live births per 1,000 women.[2] Infants born to women over age 40 experience higher rates of congenital anomalies, such as Downs Syndrome.

Women with less than 12 years of education, an important element of socioeconomic status, are about 70 percent more likely to give birth to a low-birth-weight baby or experience an infant death than women with more than 12 years of education.[31] Similarly, poor pregnancy outcomes have been linked to other indicators of lower socioeconomic status such as lack of health insurance and poor nutrition.

Congenital anomalies may be caused by environmental factors such as viruses, chemicals, and radiation. Toxic substances can affect the fetus directly, through exposure of the mother, and indirectly, by altering maternal and paternal germ cell chromosomes. Industrial toxins, such as lead, vinyl chloride, and hydrocarbons, may affect workers in industrial plants. The reproductive effects of workplace toxins, however, are still uncertain and controversial.

Prenatal Care

Numerous studies have demonstrated that early and comprehensive prenatal care reduces rates of infant death and low birth weight. An expectant mother with no prenatal care is three times as likely to have a low-birth-weight baby. The effect of early prenatal care is especially evident in studies of high-risk groups, such as adolescents and poor women.[27,58] About 76 percent of women receive prenatal care, but rates are considerably lower for many minority groups.[73]

The 1970s saw significant increases in early prenatal care, especially in groups with the lowest levels of care. Since 1980, however, the proportion of women who begin prenatal care in the first 3 months of pregnancy has reached a plateau among all racial and ethnic groups.[38]

Prenatal care can save money. The Office of Technology Assessment has studied the potential effectiveness of prenatal care for all pregnant women living in poverty. Its findings indicate that for every instance of low birth weight averted by prenatal care, the United States health care system saves between $14,000 and $30,000 in health care costs associated with this condition.[58]

Children

The health profile of American children has shifted markedly in the past 40 years. Once dominated by the threat of major infectious diseases, such as polio, diphtheria, scarlet fever, pneumonia, measles, and whooping cough, today, widespread immunization has virtually eliminated many of these diseases. Others are in steep decline.

Between 1977 and 1987, the rate of childhood deaths declined 21 percent, exceeding the 1990 target set in *Healthy People*. Unintentional injuries have now replaced infectious diseases as the cause of greatest concern for the health of children. But even for the leading cause of injury-related deaths among children—motor vehicle crashes—heartening progress has occurred. Since 1970, the rate of childhood deaths from motor vehicle crashes has declined 41 percent for children aged 1 through 4, and 31 percent for those aged 5 through 14, primarily due to the use of car seats and seatbelts.[38] Other causes of injury-related deaths among children—drowning, falls, poisoning, fires—have also declined as a result of improved protections, with the sole exception of child homicide.

Several threats to children's health are associated with low socioeconomic status. Mental retardation, learning disorders, emotional and behavioral problems, and vision and speech impairments all appear to be more prevalent among children living in poverty, often in inner cities, than among those at higher socioeconomic levels.[62] An accurate profile of the health of U.S. children, therefore, must go beyond mortality and morbidity data. It must also consider emotional, psychological, and learning problems, the social and environmental risks to which they are related, and the total costs to the Nation.

Major Health Concerns

The leading cause of death in childhood—unintentional injuries—not only accounts for the most deaths but also is among the most preventable (Fig. 2.2). Other major, preventable problems include homicide, suicide, child abuse and neglect, developmental problems, and lead poisoning.

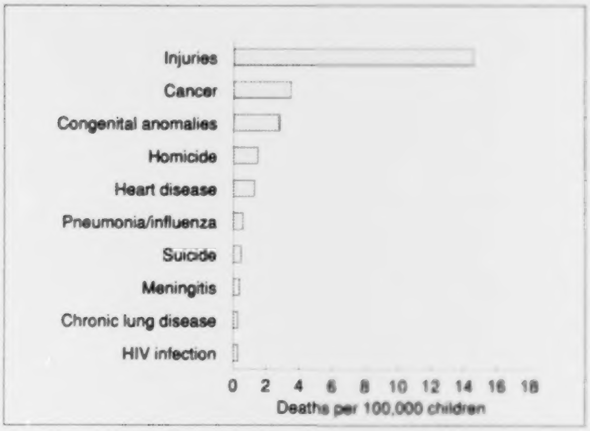

Fig. 2.2

Leading causes of death for children aged 1 through 14 (1987)

Source: National Center for Health Statistics (CDC)

Nearly half of all childhood deaths are due to unintentional injuries, and about half of these stem from motor vehicle crashes. Declines in childhood deaths from motor vehicle crashes are due in part to increasing use of child safety seats and safer automobile design. In one of the major public health successes of the decade, all 50 States now require safety restraints for young children, contributing to a 36-percent decline in motor vehicle fatalities in this age group between 1980 and 1984.[47] However, many States still do not mandate child restraints for children over age 5, and in some States there is no requirement after age 3 or 4. Furthermore, although studies suggest that 4 out of 5 passengers under age 5 now use occupant protection systems, many of the child safety seats in use have been found to be either not attached to the car seat or attached incorrectly.[48]

Drownings and fires account for most other injury-related deaths among children. Drownings are most frequent in swimming pools and home spas among children under 5. Household fires are a particular risk to children because they have more difficulty escaping than adults and are less likely to survive fire-related injuries. Deaths from fires are often due to asphyxiation and traumatic injuries, as well as burns. Children under age 5 who live in substandard housing without smoke detectors are at special risk.[24]

Injuries from falls and poisonings are not major causes of death in children but do cause many nonfatal injuries. Playground equipment and upper-story windows are frequently implicated in fall-related injuries in children.

Many injuries can be and are being prevented. During the last decade, improved safety measures have reduced fatalities. These measures include swimming pool and spa covers and childproof enclosures; child-resistant packaging for prescription drugs and some other hazardous materials; safer playground equipment; and smoke detectors. All of these, plus increased public awareness of injuries and their prevention, have helped save lives, and their wider use could save many more.

Some infections and respiratory illnesses remain problems for children. For example, influenza and other respiratory problems are the chief illness-related reasons that children miss school. In addition, the increased number of reports of asthma among children, especially those living in cities, has raised concern in recent years.[38]

Violence toward children has become of increasing concern as an American health issue, with rapidly rising rates of reported cases of child deaths due to violence. The periodic Study of National Incidence of Child Abuse and Neglect estimated that, in 1986, nearly 2 percent of children—or more than 1,000,000—were demonstrably harmed by abuse or neglect. The most common kind of abuse identified was physical, followed by emotional and sexual; the most common kind of neglect was educational, followed by physical and emotional. Substantial increases in reported physical and sexual abuse cases have occurred since 1980, but the 1986 study concluded that this was due more to improved reporting, reflecting greater public and professional awareness of the problem, than to an actual increase in child abuse. On the other hand, the study also demonstrated that many incidents of child maltreatment still go unreported.[75]

Developmental Problems

Psychological, emotional, and learning disorders are on the rise among children, as are chronic physical conditions such as hearing and speech impairment. Low-income children are at a significantly higher risk for such problems.[62]

One contributor to developmental problems in children is lead poisoning. In 1984, an estimated 3,000,000 children between 6 months and 5 years of age had blood lead levels above 15 µg/dL and 250,000 had levels above 25 µg/dL, making lead poisoning one of the Nation's most prevalent childhood threats. Severe lead poisoning can lead to profound mental retardation, coma, seizures, and death. Even low levels of exposure can impair central nervous system function, causing delayed cognitive development, hearing problems, growth retardation, and metabolic disorders.[1] Reduced lead in gasoline, air, and food, and reduced industrial emissions have produced lower mean blood lead levels nationwide. Nevertheless, homes and play areas, particularly in substandard housing areas, remain a significant source of this toxin in children's blood. The chief sources of lead exposure are thought to be old flaking lead-based paint, dust, and soil.

Healthy Child Development

Childhood is the prime time of human development. This is no less true for development of good health than it is for social, educational, emotional, and moral development. It may be easier to prevent the initiation of some behaviors, such as smoking and alcohol and drug abuse, than to intervene once they have become established. Likewise, it may be easier to establish healthful habits, such as those related to basic hygiene and those related to dietary and physical activity patterns, during childhood than later in life. Childhood is the opportune period for such healthy development.

Early use of tobacco, alcohol, and marijuana is associated with alcohol and other drug abuse later in adolescence or adulthood.[17] While most smokers start when they are young teenagers, many start even earlier. About one-quarter of high school seniors who have ever smoked report that they smoked their first cigarette by grade 6, over half by grades 7 or 8, and three-quarters by grade 9. Although cigarette smoking is declining among all age groups, those who do smoke are starting at younger ages. A wide array of factors promote smoking by children, including peer pressure, parental smoking behavior, lack of knowledge and understanding of health consequences, advertising and promotion, and the easy availability of cigarettes in unsupervised vending machines.[57]

Although the average age of first use of alcohol and marijuana is 13, pressure to begin use starts at even younger ages. Elementary school students report peer pressure to try beer, wine, and distilled spirits. Moreover, 26 percent of 4th graders and 40 percent of 6th graders reported that many of their peers had tried beer, wine, distilled spirits, or wine coolers.[51]

Lifetime diet and exercise patterns may also be established in childhood. Fat makes up more than 36 percent of calories in the average American diet, a figure that is too high according to most experts. It is recommended that children over 2, as well as adults, reduce that figure to no more than 30 percent and that saturated fats be reduced to less than 10 percent of calories. Exercise habits established in childhood may help in maintaining a physically active lifestyle throughout adolescence and adulthood. Both moderate and vigorous physical activity on a regular basis help promote overall fitness and control weight. In 1984, a little more than two-thirds of children aged 10 through 17 engaged regularly in vigorous physical activity.[72] A comparison of body composition among children between 1965 and 1985 showed a steady increase in skinfold thicknesses, a measure of body fat.

Most schools provide some health education, although the amount and content vary among States and school districts. According to recent data:

- 75 percent of school districts have antismoking education in elementary schools;[54]
- 63 percent of school districts and private schools provide some instruction concerning alcohol and other drugs and 39 percent provide related counseling;[64]
- 12 States require nutrition education from preschool through grade 12;[4]
- 32 percent of children in grades 1 through 6 and 44 percent of those in grades 7 through 9 participate in daily physical education programs, but only 1 State requires daily physical education from kindergarten through grade 12;[72]
- 25 States require comprehensive school health education programs and 9 States recommend that local school districts implement such programs.[18]

Appropriate educational strategies vary according to community and age group, but age-appropriate health education curricula can change attitudes and behavior.

Schools can also be used to facilitate children's access to basic health services. Although the traditional childhood infectious diseases have declined steeply since vaccines became available, immunization is still incomplete. Better school-based programs, information for the public, and more immunization education for physicians and health professionals are needed.

Improving the health of American children requires a wide range of social and economic interventions. For example, more and better preschool education for disadvantaged children and children with disabilities could help to detect and prevent developmental problems. Educational and support programs for parents in high-risk environments hold promise for reducing child abuse and other health problems, such as lead poisoning. The complex developmental problems besetting children in these environments demand concerted efforts by many different sectors of society. Primary care health providers, social service professionals, health educators, housing officials, community groups, and concerned individuals can each make a difference in the health of American children.

Adolescents and Young Adults

The years from 15 through 24 are a time of changing health hazards. Caught up in change and experimentation, young people also develop behaviors that may become permanent. Attitudes and patterns related to diet, physical activity, tobacco use, safety, and sexual behavior may persist from adolescence into adulthood.

The dominant preventable health problems of adolescents and young adults fall into two major categories: injuries and violence that kill and disable many before they reach age 25 and emerging lifestyles that affect their health many years later.

Two major causes of death in older age groups, heart disease and cancer, have declined sharply among adolescents since 1950—heart disease by 60 percent and cancer by 40 percent.[38] Although they are still important threats in this age group, these diseases are overshadowed by the three leading causes of death: unintentional injuries, homicide, and suicide (Fig. 2.3).

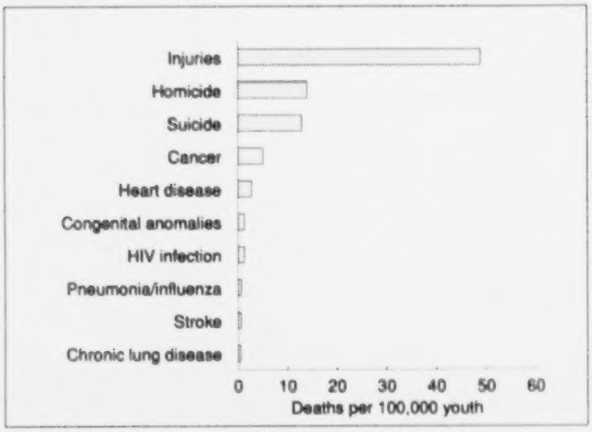

Fig. 2.3

Leading causes of death for youth aged 15 through 24 (1987)

Source: *Monthly Vital Statistics Report*, Supplement, September 26, 1989

Motor Vehicle Crash Injuries

Unintentional injuries account for about half of all deaths among people aged 15 through 24; three-quarters of these deaths involve motor vehicles. More than half of all fatal motor vehicle crashes among people in this age group involve alcohol. Young white men had the highest death rates for motor vehicle crashes in 1987, at 59 per 100,000. The rate for young black men was much lower: 36 per 100,000. The rate was lower yet for women of both races.[38]

Motor vehicle crash deaths decreased in this age group in the early 1980s, possibly because of the raised minimum drinking age in many States and decreasing alcohol use. The recent trend, however, is upward.[38] The raised speed limit on rural interstate highways may be a factor in this trend. Further, nearly 60 percent of 8th and 10th graders reported not using seatbelts on their most recent ride.[5]

Homicide and Suicide

Homicide is the second leading cause of death among all adolescents and young adults, and it is the number one cause among black youth. The homicide rate for young black men increased by 40 percent between 1984 and 1987 to nearly 86 per 100,000, more than 7 times the rate for young white men. Race, however, appears not to be as important a risk factor for violent death as socioeconomic status. Racial differences in homicide rates are significantly reduced when socioeconomic factors are taken into account.

As with motor vehicle accidents, about half of all homicides are associated with alcohol use. Nationwide, 10 percent are drug-related, but in many cities this rate is substantially higher. Over half of all homicide victims are relatives or acquaintances of the perpetrators. Most are killed with firearms.[11]

Suicide is the second leading cause of death among young white men aged 15 to 24, and rates continue to climb. From 1950 to 1987 the death rate from suicide in this group increased from under 7 to about 23 per 100,000 population. The rate of suicides among black adolescents and young adults is half of that among whites. White men between 20 and 24 years of age are more likely to commit suicide than their counterparts aged 15 through 19, but the gap between these two groups is narrowing. In general, suicides have decreased among older youth and increased among the younger cohort.[35]

Both white and black young women have relatively low suicide rates (4.7 and 2.3 respectively in 1987), although young women attempt suicide unsuccessfully approximately three times more often than young men.[35] As is the case with homicides, 60 percent of suicides among adolescents and young adults are committed with firearms.

Tobacco, Alcohol, and Drugs

Many of the most important risk factors for chronic disease in later years also have their roots in youthful behavior. The earlier cigarette smoking begins, for example, the less likely the smoker is to quit. Three-fourths of high school seniors who smoke report that they smoked their first cigarette by grade 9. Young people, especially teenage girls, are taking up smoking at younger ages. The age of initiation for regular smoking among females is now roughly the same as for males.[57]

In 1976, about 29 percent of high school seniors reported daily smoking. Between 1977 and 1981, the rate of smoking dropped to 19 percent and has since leveled off. The annual surveys of high school seniors do not gather information on school dropouts—about 15 percent of white youths and 23 percent of black youths[9]—among whom smoking is more prevalent.[61] But data for young adults aged 20 through 24 have shown a continued steady decline in cigarette smoking for young men and a recent equivalent decline for young women.

The use of snuff and chewing tobacco has increased dramatically in recent years among teenage boys. Between 1970 and 1986, snuff use increased fifteen-fold and chewing tobacco use increased fourfold among young men aged 17 through 19. In 1987, the prevalence of smokeless tobacco use among young men aged 18 through 24 was nearly 9 percent. Among younger adolescent boys aged 12 through 17, nearly 7 percent had used some form of smokeless tobacco within the last month.[65]

Alcohol consumption among teenagers and young adults is declining slowly, but it remains a major problem for both. It is a particular problem among school dropouts. Alcohol is a major contributor to both motor vehicle crashes and violence, two of the leading causes of death and disability among young people. In 1989, about 60 percent of high school seniors reported drinking alcohol in the previous month, while 33 percent reported occasions of heavy drinking—having five or more drinks on one occasion in the last 2 weeks; both figures represented slight declines from 1988 survey results.[49]

Alcohol use is also prevalent both among younger teenagers and those who are beyond high school age. In a 1987 national survey, 28 percent of 8th graders and 38 percent of 10th graders reported occasions of heavy drinking.[5] Among young people aged 18 to 24, drinking is more prevalent than in any other age group. In 1988, more than 65 percent of this group reported alcohol use during the past month.[38]

The use of illicit drugs among adolescents has been declining since the late 1970s, at least among young people who remain in school.[51] The number of high school seniors reporting illicit drug use reached a record low of about 20 percent in 1989, indicating a 50 percent drop in drug use over the last decade. Marijuana use, which peaked in 1978 at 37 percent, was down to 17 percent at the close of the 1980s. Only 3 percent of the class of 1989 reported using cocaine at least once in the last 30 days, a significant decline from the 1985 peak of 6.7 percent. Use of crack cocaine declined slightly, from 1.6 percent of high school seniors in 1988 to 1.4 percent in 1989. A more dramatic drop occurred the previous year, however, when the percentage of seniors who reported having ever used crack declined by 20 percent.[49]

Experimentation with illicit drugs often starts early. For example, in a 1987 survey of 8th and 10th graders, 6 and 10 percent, respectively, reported using marijuana in the preceding month. Slightly smaller percentages reported trying cocaine, and about a third of these had tried crack. Students' attitudes toward drugs, as toward alcohol, underwent a change during the 1980s.[5]

Sexual Behavior

An estimated 78 percent of adolescent girls and 86 percent of adolescent boys have engaged in sexual intercourse by age 20.[53,69] The risks of early sexual activity include not only unwanted pregnancy, but also infection by sexually transmitted diseases. Of the approximately 1.1 million girls aged 15 through 19 who become pregnant each year, an estimated 84 percent did not intend pregnancies. Many of these young women face serious health and psychosocial risks. Teenage mothers are more likely than others not to finish school, to be unemployed, to have low-birth-weight babies, and to lack parental skills.[23,29]

Clearly for young adolescents the most effective means of preventing possible physical and psychosocial problems related to sexual intercourse is to delay sexual activity. But, teenage sexual activity is a complex issue, embedded in family, social, and economic factors. Interventions to prevent associated negative health outcomes must address those factors if they are to succeed. For example, it has become clear to many that such interventions cannot be successful without the full support and involvement of parents and others who serve in advisory and role-model capacities with teenagers.

Lifelong Health Habits

It is important for adolescents and young adults to lay the foundation for chronic disease prevention by the promotion and maintenance of healthy lifestyles. The adoption of low-fat and low-salt dietary patterns are important for many people in the prevention of coronary heart disease and high blood pressure, and certain cancers. Further, the adoption of dietary and physical activity habits that will reduce the onset of obesity will help reduce the likelihood of coronary heart disease, diabetes, and high blood pressure. The case of physical activity is important because as students leave the school setting they lose the physical and social supports and incur time constraints that can result in decreased levels of physical activity. It is especially important for adolescents and young adults to recognize the importance of regular light to moderate physical activity in the prevention of weight gain associated with leaving the high school setting.

Although the 1980s brought some improvements in the health status of adolescents and young adults, many other young people still must confront a constellation of problems, including alcohol and other drug abuse, school failure, delinquency, peer group violence, and unwanted pregnancy. While education about risks to health is important, programs for adolescents and young adults must go beyond education to include in-depth counseling and support. Especially for youth in high-risk environments, comprehensive programs are needed to provide positive alternatives to alcohol and other drug abuse, teenage pregnancy, and lifestyles conducive to violence.

Adults

Perhaps more than any other age group, adults have the opportunity to assume personal responsibility for their health. Many of the leading causes of death for people between the ages of 25 and 65 are preventable, wholly or in part, through changes in lifestyle. Not only can adults change established lifestyles, social norms related to health can be changed as well.

Behavioral changes have saved many adult lives in the past two decades. For example, the declines, by more than 40 percent and 50 percent, respectively, in coronary heart disease and stroke death rates since 1970, are associated with reduced rates of cigarette smoking, lower mean blood cholesterol, and increased control of high blood pressure. In the same period, deaths from motor vehicle crashes declined by almost 30 percent. Lower rates of alcohol use, increased seatbelt use, and changes in speed limits contributed to this reduction. Accompanying these trends were reduced public acceptance of certain risks, such as smoking and drinking and driving.

As deaths from heart disease have declined, cancer has became the leading cause of death for people aged 25 through 64 (Fig. 2.4). These and the other top causes of death between the ages of 25 and 65—unintentional injuries, stroke, and chronic liver disease and cirrhosis—have all been associated with risk factors related to lifestyle.

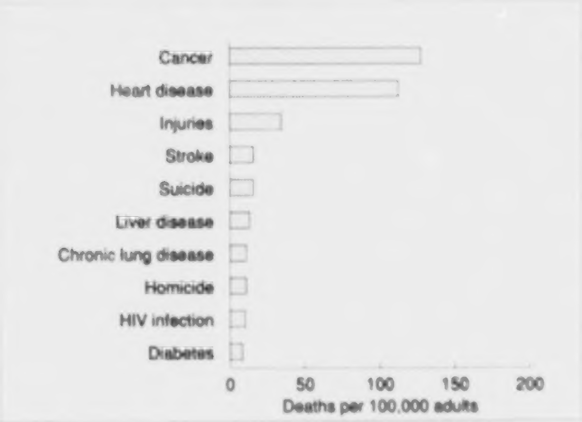

Fig. 2.4

Leading causes of death of adults aged 25 through 64 (1987)

Source: National Center for Health Statistics (CDC)

Cancer

Cancer, which is actually not one but many diseases, is associated with a variety of risk factors. Although cancer mortality rates overall have changed little since 1950, there have been significant changes in mortality for some age groups and cancers. Several prevalent forms of cancer can be either prevented or diagnosed early enough to prevent spread to other organs. It is estimated that 30 percent of cancer deaths are linked to smoking and that another large proportion, perhaps 35 percent, may be associated with diet.[19]

- **Lung cancer** is the most common—and most preventable—cancer in the United States for both men and women, and is increasing as large numbers of smokers grow older. Smoking is responsible for more than 85 percent of all lung cancer deaths. Since 1975, lung cancer incidence has risen more than 15 percent for black men, about 12 percent for black women, 12 percent for white men, and 8 percent for white women.[57]
- **Colorectal cancer** is the second leading cause of death due to cancer. Some studies have suggested that high fat and/or low fiber diets increase the risk of

colorectal cancer. Since 1969, death rates from these cancers have fallen among white men and women, remained about the same for black women, and increased markedly for black men.[36] Although there is no general agreement that screening for colon cancer definitely reduces mortality among those not at high risk, consensus recommendations have suggested screening by digital rectal exams, fecal occult blood testing, and sigmoidoscopy for those over age 50.

- **Breast cancer** has become the second most common cause of cancer deaths among women, having been surpassed by lung cancer in the past decade. However, the incidence of breast cancer is more than twice that of lung cancer in women.[3] Early diagnosis of breast cancer improves the chance of survival significantly, with 90 percent of those diagnosed when the cancer was localized reaching the 5-year survival mark.[67] Breast cancer death rates could be reduced 30 percent with regular screening. Some evidence suggests that high-fat diets may increase the risk of breast cancer.
- **Cervical cancer** can be cured if detected early. Increased use of the Pap test has contributed to a 50-percent drop in cervical cancer deaths among both black and white women since 1969. However, black women continue to have 3 times the cervical cancer death rate of white women. Although the death rates have been decreasing, the *in situ* rates have risen in younger women aged 15 through 19.[3]
- **Oropharyngeal cancer**—cancer of the mouth and throat—accounts for 13.2 per 100,000 in 1987. Increased risk has been linked both to use of tobacco products and to heavy alcohol use.[70]

Heart Disease and Stroke

Despite a recent decline, coronary heart disease still kills more than 500,000 Americans annually. Another 1,250,000 people suffer nonfatal heart attacks each year.[46] About 20 percent of those who die from heart attacks are between the ages of 25 and 65, and most are between 55 and 64.[38] Quitting smoking, reducing dietary fat (especially saturated fat), and controlling high blood pressure can reduce the risk of heart disease.

Approximately 13 percent of the nearly 150,000 Americans who died of stroke in 1986 were between the ages of 25 and 64, and the majority of these were aged 55 through 64. Black men have the highest rate of stroke among all population groups, with a death rate from stroke about twice that of white men and a substantially higher rate than for black women. A much smaller gap exists between the stroke death rates of white men and white women.[38]

High blood pressure is a well-defined risk factor for both heart disease and stroke among adults. Approximately half of all heart attack victims and two-thirds of all stroke victims have high blood pressure.[46] About 30 percent of adults have high blood pressure (over 140/90 mm Hg or taking high blood pressure medication), but most do not have it under control.[43] It is estimated that, during 1982-84, only about 24 percent of hypertensive adults between 20 and 75 had achieved blood pressure control for 2 or more years.[46] Weight control, physical activity, lower intake of alcohol and sodium, and if necessary, medication are means of controlling blood pressure.[45]

Health Habits

Several major health risk factors, sometimes alone and sometimes in combination, are associated with the 5 major causes of death in the United States: cancer, heart disease, stroke, injury, and chronic lung disease. Reducing these risks has already significantly reduced the number of years of life lost before age 65, and greater reductions are possible.

Certain eating patterns—especially excessive consumption of fats—are linked to a higher risk of heart disease, breast and colon cancer, and gallbladder disease.[63] Total dietary fat, including saturated and unsaturated fats, now accounts for more than 36 percent of the total calories consumed in the United States. A fat intake of no more than 30 percent of calories is recommended by most groups, including the American Heart Association, the American Cancer Society, and the United States Departments of Agriculture and Health and Human Services.[63] These groups recommend that the major reduction in dietary fat come from saturated fats, which are common in foods from animal sources, such as meats and dairy products.

Overweight is a problem for about one-quarter of American adults, affecting about 27 percent of women and 24 percent of men.[41] This problem is associated with high blood pressure, elevated blood cholesterol, diabetes, heart disease, stroke, some cancers, and gall bladder disease. It also may be a factor in osteoarthritis of the weight-bearing joints.

Socioeconomic status has been linked to overweight. One national survey found that 37 percent of women below the poverty level were overweight, compared with 25 percent of those above the poverty level. Overweight is especially prevalent among members of some minority groups.[41]

To reduce this risk factor, both exercise and diet are important. As of 1985, however, only about 25 percent of overweight men and 30 percent of overweight women, among people 18 and over, were combining regular physical activity with sound dietary practices to lose weight.[66] Fewer than half of adult Americans exercise regularly (3 or more days a week, sustained for at least 20 minutes each time regardless of intensity)[7], a matter of concern because a sedentary lifestyle appears to be an independent risk factor for coronary heart disease. Older adults are less likely to be physically active than younger adults. Research increasingly suggests that even moderate physical activity can decrease the risk of coronary heart disease, especially among the sedentary. Regular physical activity can also help to prevent and manage hypertension, diabetes, osteoporosis, and obesity.[10] Further, it may play a role in mental health, having a favorable effect on mood, depression, anxiety, and self-esteem.

Cigarette smoking is an important risk factor for heart disease, stroke, and some forms of cancer. In 1965, 40 percent of all Americans smoked cigarettes. Today, that figure is below 30 percent. This dramatic decline is credited with saving nearly 800,000 lives between 1964 and 1985, with an average gain in life expectancy of 21 years for each death avoided or postponed. Despite these gains, smoking is still responsible for one of every six deaths in the United States. Moreover, it is still placing certain groups at greater risk of disease than others, and it is still the single most important preventable cause of death in our society.[57]

More than 50 million Americans still smoke. In 1987, 29 percent of adults aged 20 years and older smoked cigarettes. Almost as many have quit. By 1987, nearly half of those who ever smoked cigarettes (45 percent) had stopped. Since 1974, the rate of change for quitting has been similar for blacks and whites and for men and women.[60] Though more men smoke than women, the gender gap is decreasing. Prevalence of cigarette smoking has declined sharply among men since 1965 (from 50 to 32 percent) but only slightly among women (32 to 27 percent). In general, smoking rates are higher among blacks, Hispanics, blue-collar workers, and people with fewer years of education.[22]

Alcohol is a major factor in thousands of preventable deaths, including motor vehicle fatalities, homicides and suicides, cirrhosis of the liver, and some cancers, such as esophageal and liver cancer. Alcohol is also the leading preventable cause of birth defects.

There is evidence that the use of alcohol is beginning to decline. Based on alcoholic beverage sales and tax data, the consumption of hard liquor declined 21 percent between 1978 and 1986. Wine sales increased and beer sales remained about the same. While the overall trend in the consumption of alcoholic beverages is down, it is estimated that about 9 percent of people aged 21 and older consume more than two drinks daily.[50]

Increasing public concern about alcohol and other drugs, evident in many opinion polls, has helped galvanize organized action on the part of parent groups, government agencies, community groups, schools, and businesses.[6] Drinking and driving has been the focus of much of the attention: the Surgeon General has called for stricter regulation of advertising for alcoholic beverages; citizen groups have lobbied for and legislators have passed laws raising the drinking age and establishing stiff penalties for driving while intoxicated; the news media have devoted much coverage to the problem, and even the entertainment media have incorporated messages about drinking and driving into television programs.[56]

This widespread public concern and the programs that accompany it have had an impact. The proportion of motor vehicle deaths related to alcohol dropped by 10 to 15 percent between 1982 and 1986.[38] More recently, however, the decline has slowed, indicating the need for continued efforts.

Hospital emergency room visits related to use of illicit drugs, one indication of the health impact of drug abuse, rose sharply in the 1980s, and this high rate is expected to continue for some years. Cocaine is responsible for many of these visits. In 1987, cocaine-related emergency room visits constituted 32 percent of all visits related to drugs.[20] Other data indicate that young men between the ages of 25 and 44 are at a higher risk than the total population of being killed or injured by illicit drugs. In addition, drugs are implicated in about 10 percent of all homicides, many of which occur in this age group.

Seatbelt use is an important health habit, saving an estimated 4,000 lives in 1987, a year in which only about 42 percent of motor vehicle passengers used their seatbelts. Most of the crashes in which lives were saved by seatbelts occurred in States with mandatory seatbelt laws.[39] Passage of such laws in other States should increase usage and save many more lives. In addition, beginning with 1990 models, automobile manufacturers are equipping all passenger vehicles with automatic crash protection—automatic belts or airbags—in response to a new Federal requirement. Automatic belts are expected to increase overall usage to about 85 percent.[39]

Health Services

Preventing chronic disease depends often on individual decisions—to quit smoking, to drink in moderation if at all, to consume less saturated fat, to increase physical activity. What then is the role of health services?

One answer is patient education and counseling. Clinical studies have demonstrated that counseling by health professionals is effective in helping people change dietary and smoking behaviors. The U.S. Preventive Services Task Force, in surveying the effectiveness of 169 clinical interventions to prevent disease, concluded that counseling may be even more valuable overall than conventional clinical activities to prevent disease, such as many screening tests.[74]

Screening can be extremely important, when tailored appropriately to an individual's age and risk. Early diagnosis of disease can have a significant impact on mortality rates, as shown by the results of screening for high blood pressure and high blood cholesterol. The means are also available to detect various cancers when they are still curable, such as the Pap test for cervical cancer, mammography and physical examination for breast cancer, fecal occult blood testing and sigmoidoscopy for colorectal cancer, and skin examination for skin cancer. In 1987, just 75 percent of women aged 18 and over had received a

Pap test in the preceding one to three years, and this was by far the highest proportion of adults screened for any type of cancer.[37]

Only about 25 percent of women aged 50 and older surveyed in 1987, had received a mammogram and clinical breast exam in the preceding two years. The percentage of adults aged 50 and older who received a digital rectal exam and fecal occult blood testing in the preceding two years was estimated at 27 percent.[37]

Increasing awareness about preventive services by both health professionals and the public is essential to increasing their use. More and better insurance coverage for screening and counseling would also encourage wider use of these services. Expansion of managed care systems such as health maintenance organizations (HMOs) and preferred provider organizations (PPOs) can also provide basic preventive services to more people.

The challenge facing adults as individuals is to modify their lifestyles to maintain health and prevent disease. But even in adulthood, individual decisions are subject to many forces. Lifestyles once established are difficult to change, addictions even more difficult. Resolution of many of these difficulties is compounded by factors beyond the control of individuals. Socioeconomic status, the environment, community norms, media images and coverage, advertising, worksite standards, access to health care and counseling are powerful influences on adult behavior. So the other challenge facing adults, as members of society, is to work together to create an environment that facilitates and supports healthful behavior.

Many sectors of society have made a beginning. Some employers support smoking cessation, stress management, nutrition and exercise, screening for high blood pressure and high blood cholesterol, and other health-related programs. Hospitals provide patient education services and community health promotion programs. Community groups and churches sponsor classes and support groups. State agencies have initiated community-based prevention programs in many areas. In particular, minority communities, rural communities, and people with low incomes need relevant information and programs that address their particular risks and their need for preventive services.

Older Adults

In 1900, people over 65 constituted 4 percent of the population. By 1988, that proportion was up to 12.4 percent, by 2000 it will be 13 percent and by 2030, 22 percent. The most rapid population increase over the next decade will be among those over 85 years of age.[28]

People who reach the age of 65 can now expect to live into their eighties.[38] However, it is likely that not all those years will be active and independent ones. Thus, improving the functional independence, not just the length, of later life is an important element in promoting the health of this age group.

One measure of health that considers quality as well as length of life is the years of healthy life. While people aged 65 and older have 16.4 years of life remaining on average, they have about 12 years of healthy life remaining[21,38] (Fig. 2.5). Another indicator of quality of life is an individual's ability to perform activities required for daily living, such as bathing, dressing, and eating. Difficulty in performing these necessary tasks leads to the need for assistance and often limits opportunity for remaining independent in the community. People aged 85 and older constitute a substantial share of all people who are not independent in physical functioning.

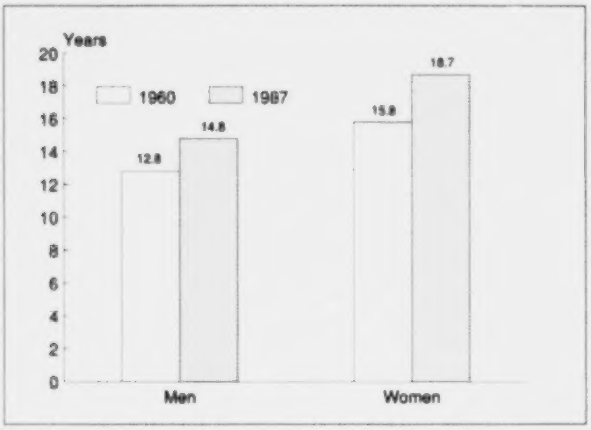

Fig. 2.5

Life expectancy at age 65 by gender

Source: *Health, United States, 1989 and Prevention Profile*

While many people think of health problems in old age as inevitable, a substantial number are either preventable or can be controlled. The major causes of death among people aged 65 and older are heart disease, cancer, stroke, chronic obstructive pulmonary disease, pneumonia, and influenza. Chronic problems, such as arthritis, osteoporosis, incontinence, visual and hearing impairments, and dementia, are of equal concern because of their significant impact on day-to-day living. To accommodate the changing needs of an increasingly older society, we must prevent the ill from being disabled and help people with disabilities preserve function and prevent further disability.[26]

A growing body of evidence shows that changing certain health behaviors, even in old age, can benefit health and quality of life. Cigarette smoking is one of these habits. Studies have shown that when older smokers quit, they increase their life expectancy, reduce their risk of heart disease, and improve respiratory function and circulation.[57] Good nutrition is also important in the promotion and maintenance of health for older adults. Diet can play an important role in mitigating existing health problems with older people. Reducing sodium intake and losing weight, for example, can help keep blood pressure under control, and there is growing evidence that nutrition counseling and food programs can reduce the risk of disease among older adults.[28]

Physical Activity

A key ingredient to healthy aging is physical activity. Often physiological decline associated with aging may actually be the result of inactivity. Over 40 percent of people over age 65 report no leisure time physical activity.[7] Less than a third participate in regular moderate physical activity, such as walking and gardening, on a regular basis, and less than 10 percent engage routinely in vigorous physical activity. Yet regular physical activity and exercise are critical elements of health promotion for older adults. Increased levels of physical activity are associated with a reduced incidence of coronary heart disease, hypertension, noninsulin-dependent diabetes mellitus, colon cancer, and depression and anxiety which are diseases prominent in older adult populations.[10]

Moreover, increased physical activity increases bone mineral content, reduces the risk for osteoporotic fractures, helps maintain appropriate body weight, and increases longevity. It may also be that increased physical activity levels can improve balance, coordination, and strength, factors that may reduce the likelihood of falls in the older adult. Recent studies of exercise training among this age group have shown that older persons can adapt to increased levels of exercise with positive health benefits resulting from both high and low intensity exercise. In addition to these health benefits, a more important result of regular physical activity appears to be the maintenance of functional independence throughout the later years of life.

Health Services

People over age 65 need regular primary health care services to help them maintain their health and prevent disabling and life-threatening diseases and conditions. Clinical preventive services include the control of high blood pressure, screening for cancers, immunization against pneumonia and influenza, counseling to promote healthy behaviors, and therapies to help manage chronic conditions such as arthritis, osteoporosis, and incontinence. For example, skin cancer screening can detect the majority of malignant melanomas and basal cell carcinomas.

Especially important among these clinical services are those to detect breast cancer: screening mammography and clinical breast examination. These screening interventions are estimated to reduce mortality from breast cancer in women over age 50 by about 30 percent.[67] In addition, Pap tests to detect cervical cancer are important for older as well as for younger women.

Because pneumococcal disease is 3 times more prevalent among those over 65 than among younger people and takes many older lives, immunization of older adults is an important preventive service. Pneumonia was responsible for an average 48 days of restricted activity per 100 people aged 65 and older in 1987.[42] Likewise, immunization against influenza is recognized now as a basic preventive intervention for older adults. During 6 flu epidemics from 1972 to 1982, the death rate was 34 to 104 times higher in this age group than in younger people. Only about 10 percent of older adults living in the community receive pneumococcal vaccine and 20 percent receive influenza vaccines.[13]

The number of medicines prescribed to persons over the age of 65 increases the risk of adverse drug reactions, drug interactions, and other health problems associated with the use and misuse of medications. The risk of adverse reactions may be exacerbated by the physiological changes associated with aging. For example, decreased kidney and liver function can change the way the body processes medications. In some cases, the adverse effects of medication can be prevented by using a different drug or lower dose. Physicians, nurses, pharmacists and other health professionals can help reduce this risk through careful reviews of medication use and patient counseling.

Primary health care providers are necessary partners in the maintenance of good health and functional independence for older adults. In addition to ensuring appropriate screening, counseling, and immunization, they can monitor health status to detect early signs of other health problems that can threaten independence such as dementia or depression, as well as ensure an accurate distinction between the two in diagnosis. Alzheimer's disease is the best known and leading cause of cognitive impairment in older adults, but there are other, more treatable forms of dementia, characterized by deterioration of memory, orientation, general intellect, specific cognitive capacities, and social functioning. The prevalence of dementia ranges from about 5 to 10 percent of people over age 65, to 20 to 40 percent of those who have reached age 80. While most cases are not treatable, 10 to 20 percent of them—those caused by drug toxicity, metabolic disorders, depression, or hyperthyroidism—may be reversible.[16,34]

Providers can play an important role in identifying patients at risk for conditions for which interventions may be appropriate, e.g., counseling women at high risk for osteoporosis about the benefits and risks of estrogen replacement therapy. Urinary incontinence is another condition that can have serious consequences for functional independence. It affects many noninstitutionalized older adults and about half of all nursing home residents.[52] The risk of incontinence increases with age but it often is a sign of other problems. Various treatments are available, including pelvic muscle exercises and other behavioral treatments, drug therapy, and surgery. A major impediment is that only about half the people with incontinence report it to their physicians. Increased awareness of available treatments could reduce this often incapacitating problem.

Social Networks

Social isolation is both a risk factor for disease and a measure of reduced functional independence. Social support networks are of critical importance in promoting the health and independence of older adults.[28] Life changes common to the seventh and eighth decades can increase the risk of social isolation. Retirement and changes in social roles can affect systems of contact and support, as can the loss of spouses and close friends.

Depression, a frequent outcome of such changes, is of particular concern among older adults because of its impact on functional independence and its importance as a risk factor for suicide. Men aged 65 through 74 have the highest suicide rate in the United States.[12] Depression is treatable but often goes unsuspected by families and undiagnosed by physicians, perhaps because it is often only one of several health problems besetting an older adult. However, primary care providers who recognize the clinical signs and risk factors for depression—bereavement, loneliness, and low self-esteem—can help reduce suicide among older adults. Illness and disrupted marital status have also been linked to suicide in this age group.

Community support networks that provide services to help older adults maintain independence are also critical interventions for reducing social isolation. Primary care providers can also play a critical role, not only in the identification of individuals at risk, but also by supplying information and referral to available services.

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3. The Nation's Health: Special Populations

Progress toward a healthier America will depend substantially on improvements for certain populations that are at especially high risk. For that reason, *Healthy People 2000* sets specific targets to narrow the gap between the total population and those population groups that now experience above average incidences of death, disease, and disability. These population groups include people with low incomes, people who are members of some racial and ethnic minority groups, and people with disabilities. Likewise, it sets specific targets for controlling some of the risk factors that contribute to the disease burden of groups at highest risk. Special population groups often need targeted preventive efforts, and such efforts require understanding the needs and the particular disparities experienced by these groups. General solutions cannot always be used to solve specific problems.

This section provides profiles of the at-risk population groups addressed by *Healthy People 2000*: low-income groups, minority groups, and people with disabilities. At the outset, it is necessary to point to two caveats that limit these profiles and pose major health challenges in themselves.

First, data are limited; sometimes, and for some groups, the data may be severely limited. Without data, targets cannot be set, even though professional consensus exists that a population group is at considerably higher risk than the total population. A challenge of the coming years is to build better data systems, at national and State levels, in order that the scope of health threats facing various groups within our society can be adequately defined and appropriate preventive interventions can be effectively focused.

Second, the special populations themselves are extremely heterogenous. Whether the group is defined as low income, black, Hispanic, Asian and Pacific Islander Americans, American Indians and Alaska Natives, or people with disabilities, the variations within each group are extensive. Generalizations, which characterize population profiles by definition, are dangerous because the exceptions are many. The challenge is to refine our knowledge and our understanding even further, especially as basic health policies are translated into community-based prevention programs and clinical preventive services.

With these two caveats in mind, profiles of special populations can be used, together with those in the preceding section that address age groups, to provide the human context for the health strategy laid out in this report.

People with Low Income

Nearly 1 of every 8 Americans lives in a family with an income below the Federal poverty level. Nearly a quarter of children younger than 6 are members of such families.[11] Low income itself (or low socioeconomic status) is a shorthand label that encompasses family groups with individuals who have poorly paid jobs or are unemployed, families living in substandard housing, and families more likely to have only a single parent in residence. Health disparities between poor people and those with higher incomes are almost universal for all dimensions of health. Those disparities may be summarized by the finding that people with low income have death rates that are twice the rates for people with incomes above the poverty level.[1]

For virtually all of the chronic diseases that lead the Nation's list of killers, low income is a special risk factor. For example, the risk of death from heart disease is more than 25 percent higher for low income people than for the overall population.[16] The incidence of cancer increases as family income decreases, and survival rates are lower for low-income cancer patients. The association of cancer and low income varies by cancer site; lung, esophageal, oral, stomach, cervical, and prostate cancers are more frequent among the poor, while breast and colorectal cancers are not.[1,30] Infectious diseases, like HIV infection and tuberculosis, are also often found disproportionately among the poor.

Similar vulnerability for low income people is found with some causes of traumatic injury and death. These individuals, more than those with higher incomes, are the victims of violent crime. Poverty appears to be a major predisposing factor associated with a higher risk for murder of acquaintances and family members, as well as robbery-motivated killings of strangers. Injuries and deaths among children from fires, drowning, and suffocation are strongly related to low socioeconomic status.[11]

No single indicator of health status makes the connection between poverty and poor health more clear than does infant mortality. Poor pregnancy outcomes including prematurity, low birth weight, birth defects, and infant death are linked to low income, low educational level, low occupational status, and other indicators of social and economic disadvantage.[8]

Poverty reduces a person's prospects for long life by increasing the chances of infant death, chronic disease, and traumatic death; poverty is also often associated with significant developmental limitations. For example, iron deficiency is more than twice as common in low income children, aged 1 and 2, as it is among the total population of that age.[14] Growth retardation affects 16 percent of low income children younger than age 6. In the mid-1980s, an estimated 3 million children, virtually all of them from low income families, had blood lead levels that exceeded 15 μg/dL, sufficient to place them at risk for impaired mental and physical development. The rate of mental retardation is reported to be higher among children in poverty. Poor children experience more sickness from infection and other debilitating conditions than the total population. Children in families with incomes below $5,000 per year had an average of 9.1 disability days in 1980 compared to only 4 days for children in families with incomes of $25,000 or more.[15]

The pattern of increased vulnerability to injury, disease, and death continues into adulthood. People in families with incomes of less than $13,000 a year are twice as likely as the total population to be limited in major activities because of their health (Fig. 3.1). Activity limitations are four times more common among people with 8 years or less of education than among those with 16 years or more. Bed disability days increase as income decreases.[17]

Just as poor health is more likely among persons of low income, so are some, but not all, of the major risk factors for poor health. Higher-than-average rates of obesity and high

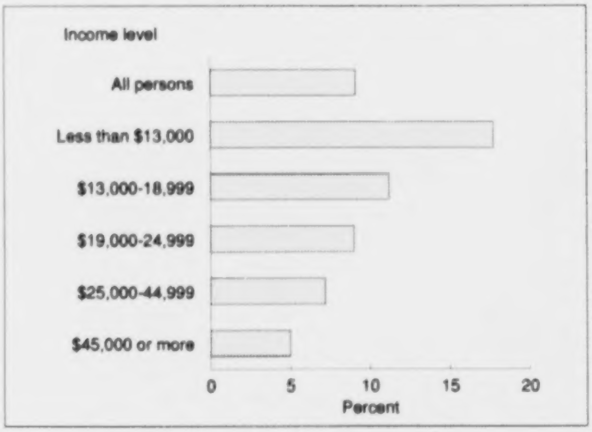

Fig. 3.1

Percentage of people who experience limitation of major activity, by income level (1988, age-adjusted)

Source: National Health Interview Survey (CDC)

blood pressure, which are major risks for heart disease and stroke, have been linked directly with low income status.[23] Tobacco use, which has declined dramatically in the past two decades for the population as a whole, has remained virtually constant since 1966 for those who completed less than 12 years of schooling. Smoking levels among blue-collar workers are about 20 percent higher than among others.[21]

Whereas in 1986 over 15 percent of people under age 65 had no health insurance either by private or public forms of coverage, lack of health insurance coverage was a problem for 37 percent of families with incomes below $10,000 a year.[12]

In 1987 only 22 percent of low-income women over age 40 had ever received a clinical breast examination and a mammogram, as compared to 36 percent of women in the total population.[15] Relatively low survival rates for breast cancer among low-income women point to the need for earlier diagnosis and treatment. While the benefits of prenatal care for low-income women are well documented, with a savings-cost ratio on the order of 3-to-1, low utilization rates are characteristic of groups at high risk of low birth weight and other maternal and infant health problems.[8] Approximately 40 percent of children from low-income families have untreated dental caries, another indicator of the lack of preventive and primary health care.[20]

For the coming decade, perhaps no challenge is more compelling than that of equity. The disparities experienced by people who are born and live their lives at the lowest income levels define the dimensions of that challenge. The relationships between poverty and health are complex and cannot be reduced to a simple one-to-one relationship between dollars available and level of health. Low income may, in fact, be a product of poor health, just as poor health may be caused by environmental exposures, material deficiencies, and lack of access to health services that adequate income might correct or improve. While, from a public health perspective, the leverage available to effect improvements is limited largely to the availability and the quality of health services, improvements in education, job training, and other social services are necessary to erase the health effects of current income disparities.

People in Minority Groups

The United States has been called a "melting pot" of ethnic and racial groups. In recent decades, it has become clearer that the image is no longer an appropriate one. Rather than amalgamating into one single group, we have come to recognize and even celebrate our diversity as a basis for national strength. Nevertheless, our health care programs are characterized by unacceptable disparities linked to membership in certain racial and ethnic groups.

The predominant minority populations of the United States can be categorized as blacks, Hispanics, Asian and Pacific Islander Americans, and American Indians and Alaska Natives. From a total population perspective, the categories simplify the difficulties of assessing health status and making plans to improve health. But they are gross simplifications. Within each racial or ethnic category, significant subgroup differences exist. Demarcations among minority populations are not absolute. For example, there are both black and nonblack Hispanics. Many nonblack Hispanics share historic roots and genetic endowments that are closely related to those of many American Indian groups, while others have European roots and do not share the genetic make-up which may predispose to adult-onset diabetes. Alaska Natives may have more in common with some Asians than they do with American Indians in the lower 48 States. In short, differences within the principal population groups must always temper generalizations about their health needs.

The extent of disparities suffered by minority groups in America was documented in the mid-1980s by the *Report of the Secretary's Task Force on Black and Minority Health.*[30] This report found that black Americans suffered nearly 60,000 excess deaths per year in the period 1979-1980, with "excess deaths" defined as the difference between the number of deaths observed in that minority population and the number of deaths that would have been expected if that population had the same age- and gender-specific death rate as the white population.

A compelling disparity of most minority populations in the United States is socioeconomic. The discussion on low-income people describes a small portion of the white American population. It applies to much larger portions of those from black, Hispanic, Asian and Pacific Islander, and American Indian and Alaska Native communities. Poverty and near-poverty appear as underlying elements of many health problems experienced by these groups. But if the socioeconomic effects are set aside, disparities experienced by these population groups will still be observed. Simply put, some differences in survival and health are not solely explained by poverty or other environmental factors.[4] For that reason, *Healthy People 2000* assesses disparities not only in terms of income level and educational attainment, but also in terms of the Nation's racial and ethnic population groups. Special population targets for improvements to be achieved by 2000 are set for those groups with higher risks than the total population, where data are available to establish such targets.

Black Americans

African Americans make up 12 percent of the United States population, thereby constituting the Nation's largest minority group. Members of this group live in all regions of the country and are represented in every socioeconomic group. One-third of blacks live in poverty, a rate three times that of the white population. Over half live in central cities, in areas often typified by poverty, poor schools, crowded housing, unemployment, exposure to a pervasive drug culture and periodic street violence, and generally high levels of stress. Life expectancy for blacks has lagged behind that for the total population throughout this century; since the mid-1980s the gap has actually widened, with the life expectancy rising to 75 years for the overall population while falling slightly for blacks, from a high of 69.7 years in 1984 to 69.4 years in 1987.[3] The leading chronic diseases as causes of death for black Americans are the same as those for the majority population (Fig. 3.2). However, black men die from strokes at almost twice the rate of men in the total population, and their risk of nonfatal stroke is also higher. Coronary heart disease death rates do not show such disparate levels, although death rates are higher for black women than for white women. On the other hand, when heart disease rates are compared within income levels, black rates are lower than those for whites.[30]

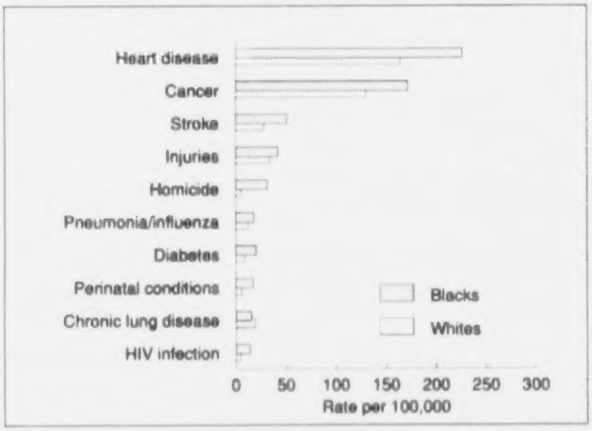

Fig. 3.2

Leading causes of death for blacks compared to whites (1987, age-adjusted rates)

Source: National Center for Health Statistics (CDC)

Black men also experience a higher risk of cancer than nonblack men, with a 25-percent higher risk of all cancers and a 45-percent higher incidence of lung cancer. Only 38 percent of blacks with cancer survive 5 years after diagnosis, compared to 50 percent of whites.[30]

Diabetes is 33 percent more common among blacks than whites. The highest rates are among black women, especially those who are overweight. The complications of diabetes—heart disease, stroke, kidney failure, and blindness—all are more prevalent among blacks with diabetes than whites with diabetes.[30]

Black babies are twice as likely as white babies to die before their first birthday. High rates of low birth weight among black babies account for many of these deaths, but even normal-weight black babies have a greater risk of death. Black infant mortality rates are higher not only for babies in the first month of life, but also for those between 1 month and 1 year of age. The major killer in this period is sudden infant death syndrome (SIDS). Other causes of death that are more prevalent for black infants than for the total population include respiratory distress syndrome, infections, and injuries.[19]

Homicide is the most frequent cause of death for black men between the ages of 15 and 34. The homicide rate for those between ages 25 and 34 is 7 times that of whites. A black man has a 1-in-21 lifetime chance of being murdered, and black women are more than four times as likely to be homicide victims as white women.[30] Most young black murder victims are killed with firearms in the course of an argument. It is estimated that about half of all homicides in the United States are related to alcohol use and 10 percent or more to the use of illegal drugs.

The rate of AIDS among blacks is more than triple that of whites. Among women and children, the gaps are even wider. Black women face between 10 and 15 times the risk of AIDS as compared to white women. Black children account for more than 50 percent of all children with AIDS. The proportion of AIDS cases associated with intravenous drug abuse is greater for blacks than for other AIDS victims, and higher rates of heterosexual transmission of the HIV virus and transmission of the virus from mother to infant occur as a consequence.[26]

Disparities in the experience of health risks mirror some of the most striking disparities in health outcomes. High blood pressure is much more common among blacks of both genders than among the total population. Severe high blood pressure is present 4 times more often among black men than among white men.[29] Overweight is a problem for 44 percent of black women aged 20 and older, compared to 37 percent for low income women and 27 percent for all women. Poor nutrition, smoking, alcohol and drug abuse, and other risk factors appear more commonly among blacks with low incomes.[30]

Adolescent pregnancy is a major concern among the black population, for its social and economic consequences as much as for its health effects. There are higher risks of infant mortality and low birth weight, especially for very young pregnant girls. But even greater risks indirectly threaten the health of both mother and baby because of the patterns of poverty and low educational attainment that often become solidified as a result of early childbearing. Actual rates of childbirth among black teenagers have dropped since the 1960s, but because the number of girls in this population has risen by 20 percent, the total number of births has increased. In 1987, births among girls aged 15 through 17 were 3 times as likely among black girls as among white girls. Birth rates among black girls younger than 15 were nearly 5 times higher, than the rate for white girls.[12]

Statistics demonstrate with sharp clarity that blacks do not receive enough early, routine, and preventive health care. Early prenatal care can reduce low birth weight and prevent infant deaths. Early detection of cancers can increase survival rates. Appropriate medical care can reduce the frequency and severity of the complications of diabetes, which blacks experience at higher rates than others. Information about actual use of health care services confirm these indications. Blacks make fewer annual visits to physicians than whites, and black mothers are twice as likely as white mothers to receive no health care or care only in the last trimester of their pregnancies.[30] Hospital emergency rooms and clinics are a much more common source of medical care for blacks than for whites, and 20 percent of blacks compared to 13 percent of whites report no usual source of medical care.[30] Though recent statistics are not available to assess immunization coverage by race, children in central cities—many of whom are black Americans—lagged as much as 20 percent behind immunization rates for children living in other places. In 1986, about 23 percent of blacks had no private or public medical insurance, compared to 14 percent of whites.[12]

Hispanic Americans

The Hispanic subgroups—Mexican Americans, Puerto Ricans, Cuban Americans, Central and South American immigrants, and other Spanish-surname/Spanish-speaking communities—compose the second largest minority group in the United States. At the beginning of the 1990s, they constitute about 8 percent of the total population and are the fastest growing minority group. Over 70 percent of Hispanics were born in this country. Within the Hispanic populations, Mexican Americans are nearly two-thirds of the total, Puerto Ricans (excluding those who live in Puerto Rico) are 12 percent, Cuban Americans are 5 percent, people of Central and South American origin are 11 percent, and others (including Spanish-speaking immigrants from Caribbean islands) make up 9 percent. Eighty-seven percent of Hispanics live in urban areas. The largest concentrations of Mexican Americans are in Western States, notably California and Texas. More Puerto Ricans reside in East Coast States, led by New York. Cuban Americans more often reside in Florida.[13]

Hispanics experience perhaps the most varied set of health issues facing a single minority population. Whereas Mexican Americans have low rates of cerebrovascular disease, stroke rates among New York Puerto Ricans are high. Cuban Americans have high utilization rates for prenatal care, but lower rates prevail among Mexican Americans and Puerto Ricans. Infant mortality rates vary substantially from group to group (Fig. 3.3). In short, the Hispanic health profile is marked by diversity. This diversity is intertwined with the ever-present effects of socioeconomic status, and with geographic and cultural differences.

Two related demographic facts are especially important for the health issues and prospects of the Hispanic population: its youthfulness and its high birth rate. The

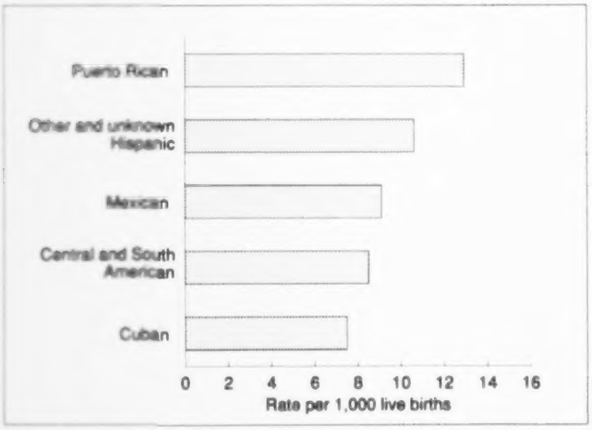

Fig. 3.3
Infant mortality rates for selected Hispanic groups (1983-84)

Source: National Linked Birth and Infant Death Data Set (CDC) median Hispanic age is less than 26, compared to about 33 for the total population. Approximately 38 percent of all Hispanics are aged 19 and younger.[3] The Hispanic birth rate was 22.3 births per 1,000 women in 1987, while that of the total population was 15.7 births per 1,000 women.[19]

The leading causes of death among Hispanic Americans document several differences between their health experience and that of the total population (Fig. 3.4). Heart disease and cancer lead the list, as is the case for other Americans, but death rates from these 2 causes are actually lower than for non-Hispanics. Unintentional injuries, homicide, chronic liver disease and cirrhosis, and AIDS rank higher on the Hispanic list; suicide, stroke, and chronic obstructive pulmonary disease rank lower.[13] In the case of homicide, the great majority of victims are young men. In the southwest, Hispanic men aged 20 through 24 have 4 times the homicide rate of their non-Hispanic, white counterparts.[28] In the case of AIDS, Hispanics' rate is nearly 3 times higher than for non-Hispanic whites, with rates among Puerto Rican-born Hispanics as much as 7 times higher.[27] The cumulative incidence of AIDS among Hispanic women is about 8 times higher than among non-Hispanic women, and the rate for HIV infection over 6 times higher for Hispanic children. As with black Americans, HIV transmission among Hispanic women is primarily linked to intravenous drug abuse by these women or their sexual partners.[27] Diabetes is especially prevalent among Mexican Americans.[13]

Hispanics		*Rank*	*White non-Hispanics*	
Heart disease	25%	1	Heart disease	37%
Cancer	17%	2	Cancer	23%
Injuries	9%	3	Stroke	7%
Stroke	6%	4	Chronic lung disease	4%
Homicide	5%	5	Injuries	4%
Liver disease	3%	6	Pneumonia/ influenza	4%
Pneumonia/ influenza	3%	7	Diabetes	2%
Diabetes	3%	8	Suicide	2%
HIV infection	3%	9	Atherosclerosis	1%
Perinatal conditions	3%	10	Liver disease	1%

Fig. 3.4

Leading causes of death for Hispanics and white non-Hispanics in 18 States and the District of Columbia, as a percent of total deaths (1987)

Source: *Monthly Vital Statistics Report*, Supplement, September 26, 1989

Note: National death rate data unavailable for Hispanics.

Among the risks to health, smoking continues among 43 percent of Hispanic men, and Hispanic teenagers of both genders smoke more than do either non-Hispanic black or non-Hispanic white teenagers. Likewise, Hispanic teenagers report heavy drinking of alcoholic beverages more frequently than do white or black teenagers. Puerto Ricans and Cuban Americans aged 12 through 17 report higher rates of cocaine use than do either whites or blacks, and Mexican Americans have higher rates of marijuana use. Cocaine-related deaths tripled between 1982 and 1984 among Hispanics, while they were doubling among non-Hispanic whites.[13]

Overweight is common among Hispanics, especially among Mexican American women. This disparity cannot be accounted for completely by socioeconomic differences. Likewise, Mexican Americans participating in a San Antonio Heart Study were found to have physical activity rates lower than those in the total population, even after differences in socioeconomic status, residential location, and gender were taken into account.[13]

Like black Americans, Hispanic Americans receive less preventive health care, including prenatal care, than the total population. In 1987, 39 percent of Hispanic mothers had no prenatal care during the first trimester of pregnancy compared to 21 percent of non-Hispanic whites.[12] Barriers to care include language differences between Spanish-speaking patients and English-speaking health professionals, logistical barriers posed by rural residence of some Hispanic families, and costs of services.

Migrant farmworkers, a small but important subset of Hispanic Americans, deserve special attention. Migrant farmworkers may also belong to white, black, Haitian, or other ethnic groups, but the largest group is Hispanic. Their infant mortality rate is about 25 percent greater than that of the national average; their life expectancy is 49 years rather than 75 years; the rate of parasitic infection among some sets of farm workers approaches 50 times that of the total population.[18] The health care needs of these farmworkers are particularly challenging, given their migratory patterns, low incomes, poor education, and lack of health insurance.

Asian and Pacific Islander Americans

The diversity that characterizes the more than 11 million people who are Asian and Pacific Islanders is striking. As a whole, they are the Nation's third largest minority group, but this single label is an oversimplification. They speak over 30 different languages and bring with them a similar number of distinct cultures. Approximately three-quarters of them are immigrants, mostly from Southeast Asia, and many of them are refugees. A small proportion are either immigrants from South Pacific islands or Native Hawaiians.[3]

From the perspective of their health prospects, those born within the United States and established here for generations are virtually undistinguishable from the population as a whole. Indeed, their median income is higher than that of the overall United States population, with Japanese families having annual incomes 38-percent higher than the national median income. Yet, some groups, particularly recent immigrants, are extremely poor. For example, Laotian immigrants have one of the highest poverty rates of any group in the Nation. Even within subgroups, diversity characterizes both socioeconomic and health profiles. While Chinese Americans generally enjoy adequate incomes and relatively good health, communities such as Chinatown in San Francisco have higher poverty levels. Elimination of the disparities between Asian and Pacific Islander Americans and the general population may parallel integration of the newer immigrants into both the economy and the society of the United States.

An adequate depiction of the health of Asian and Pacific Islander Americans is constrained because data cannot be stratified by subgroups. Many national data systems are unable to make estimates of this minority population because of its relatively small size. This prevents accurate assessment of the leading causes of death, disease, and disability that it experiences. From local studies, however, it is possible to recognize certain diseases as posing higher than normal risks for specific Asian and Pacific Islander Americans. Most of the studies are based in California, which has the largest Asian and Pacific Islander American population (Fig. 3.5). Generalizations from local studies may be inaccurate and misleading due to the profound differences among Asian and Pacific Islander American groups, for example the difference in perinatal mortality among the groups (Fig. 3.6).

Disparities in rates of cancer exist for several subgroups and selected cancer sites. For example, the breast cancer incidence rate among Native Hawaiians is 111 per 100,000 women, as compared to 86 per 100,000 among whites.[2] The lung cancer rate is 18 percent higher among Southeast Asian men than for the white population. And the liver cancer rate is more than 12 times higher among Southeast Asians than in the white population.[2,25] Higher rates of high blood pressure have been found among Filipinos aged 50 and older living in California (61 percent for men and 65 percent for women) than among the total California population (47 percent).[30]

Asians and Pacific Islanders		*Rank*	*Whites*	
Heart disease	28%	1	Heart disease	35%
Cancer	24%	2	Cancer	23%
Stroke	9%	3	Stroke	8%
Injuries	7%	4	Chronic lung disease	5%
Pneumonia/ influenza	4%	5	Pnuemonia/ influenza	4%
Chronic lung disease	3%	6	Injuries	4%
Suicide	2%	7	Suicide	2%
Diabetes	2%	8	Liver disease	2%
Perinatal conditions	2%	9	Diabetes	1%
Liver disease	1%	10	Atherosclerosis	1%

Note: California's published data on the Asian and Pacific Islander population includes 93 percent Asians and 7 percent Other (Native Americans, Eskimos, and Alaskan Aleuts.) National death rate data are unavailable for Asians and Pacific Islanders.

Fig. 3.5

Leading causes of death for Asians and Pacific Islanders and whites in California, as a percent of total deaths (1987)

Source: California State Department of Health and Asian American Health Forum

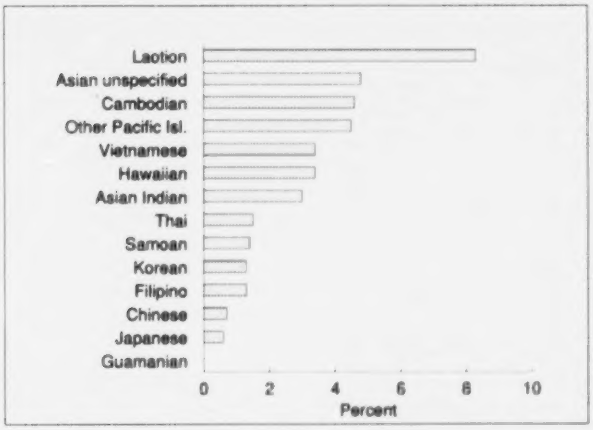

Fig. 3.6

Percent of deaths attributed to conditions originating in the perinatal period, for selected Asian groups

Source: California State Department of Health and Asian American Health Forum

The two infectious diseases that have followed immigrant Asian and Pacific Islander population subgroups to this country are tuberculosis and hepatitis B. Tuberculosis is still the leading cause of death in some Asian countries and has become a serious health problem in some Asian communities in large American cities. Among Southeast Asian immigrants, the incidence is 40 times higher than in the total population. Rates are particularly high among those over age 45.[2] Higher rates of hepatitis B are also found among Asian immigrants. This infection is associated with chronic liver disease, cirrhosis, and liver cancer. The overall carrier rate in the United States is estimated to be 0.3 percent of the population; among immigrants from Southeast Asia the estimated rate is 4 percent. Infection is spread from mother to infant and from child to child. Refugee transit camps now screen pregnant women and vaccinate infants of those who are carriers of hepatitis B and all children under age 6.[5] Among the risk factors of greatest concern is smoking. Among California immigrant groups, smoking rates among men are 92 percent for Laotians, 71 percent for Cambodians, and 65 percent for Vietnamese, compared to 30 percent for the overall American population.[2]

Faced with western medicine and a health care system that is unfamiliar, Americans of Asian and Pacific Island heritage experience unique access barriers to primary care. In addition to linguistic and cultural differences, financial problems beset many subgroups, especially recent immigrants and refugees.

American Indians and Alaska Natives

Descendants of the original residents of North America now number approximately 1.6 million and compose the smallest of the defined minority groups. Diversity characterizes this group, too, encompassing numerous tribes and over 400 federally recognized nations, each with its own traditions and cultural heritage. Eskimos, Aleuts, and Indians residing in Alaska are referred to as Alaska Natives; those residing in other States are referred to as American Indians. The Federal Government collects detailed data on American Indians and Alaska Natives in 33 States that include reservations; health care services are provided through the Indian Health Service to those living in these reservation States. Thus, it is possible to derive a composite profile of this population group. However, only about one-third of this group lives on reservations or historic trust lands, while about 50 percent live in urban centers.

In general, the American Indian and Alaska Native population is youthful. The median age of those living in the reservation States is about 23, compared to over 32 for the United States population as a whole. Income and educational levels tend to be low, with more than 1 in 4 living below the poverty level and fewer than 8 percent having college degrees.[6]

One reason for the youthfulness of the population is the large proportion of the population who die before age 45. Most of the excess deaths—those that would not have occurred if American Indian death rates were comparable to those of the total population—can be traced to 6 causes: unintentional injuries, cirrhosis, homicide, suicide, pneumonia, and complications of diabetes (Fig. 3.7). Heart disease and cancer are not among the sources of excess deaths, perhaps because these are generally diseases of older age. Cancer rates are lower overall, but are twice as high as the total population for lung cancer among Oklahoma Indians. Southwest Indians have high rates of gallbladder cancer, and Alaska Natives suffer high rates of liver cancer.[30]

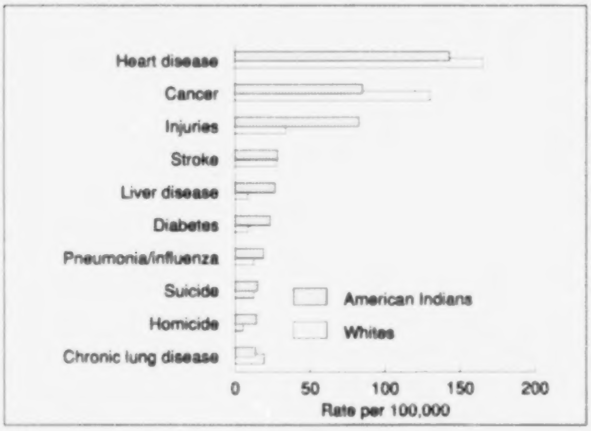

Fig. 3.7

Leading causes of death for American Indians in Reservation States compared to whites (1987, age-adjusted rates)

Source: Indian Health Service and National Center for Health Statistics (CDC)

The second leading cause of death among American Indian men, and the first cause for those younger than age 44, is unintentional injuries, accounting for over one-fifth of all their deaths each year.[19] An estimated 75 percent of these injuries are alcohol-related, and 54 percent involve motor vehicle crashes. Alcohol is also a factor in a homicide rate that is 60 percent higher than that of the total population. Suicide, the third of the four alcohol-related causes of death among American Indians, occurs at an overall rate that is

28 percent higher than the national rate, but among some tribes the suicide rate is 10 times higher than the total population rate.[6]

Cirrhosis and diabetes are the two chronic diseases that afflict American Indians more frequently than other groups. Cirrhosis deaths occur at about three times the total population rate, and cirrhosis is the fourth alcohol-related health effect contributing significantly to death and disability among American Indians.[24] Diabetes is now so prevalent that in many tribes more than 20 percent of the members have this disease.[6] Among two tribes in Arizona, the rate is 40 percent of adults. Obesity contributes to the high incidence of diabetes experienced by many American Indian communities, and it is also linked to hypertension and cardiovascular disease. The increase in obesity among American Indians in the last 50 years has paralleled the increasing rates of diabetes.

Alcohol and obesity are risk factors that stand out as problems for the American Indian population. One estimate is that 95 percent of American Indian families are affected either directly or indirectly by a family member's alcohol abuse.[24] While American Indians living on reservations and tribal members with access to reservation health facilities are served by the Indian Health Service, access to health care is still a problem for many. Many live in rural areas where the availability of physicians is about half that of the national average and where the Indian Health Service may not provide health care services. Health problems may appear especially intractable, but gains achieved among a number of tribes in reducing infant mortality rates to levels below those of the population as a whole provide testimony to the possibility of major improvement in the coming decade.

People With Disabilities

Throughout this document, the preventive actions implicit in targets to be achieved by 2000 seek not only to reduce unnecessary deaths and the immediate suffering and costs of infectious and chronic diseases; they also seek to prevent the longer-term consequences of functional impairments that can severely affect the quality of one's life. As a prevention plan for the 1990s, *Healthy People 2000* addresses not only the prevention of premature death and disease, but also the prevention of disabilities. Even when data are unavailable to define health outcomes except in terms of death, the thrust of objectives for the year 2000 is aimed at the living consequences of unhealthy behaviors, unsafe environments, and illness-causing infections. Disabilities may be defined, as distinct from illness or disease, in terms of limited ability to function. Disabilities may be physical or mental; and they may include motor or sensory limitations. The focus is on effects, rather than causes, since a similar functional limitation, such as a limitation in ability to walk, may be caused by a congenital birth defect, an injury, or a leg amputation resulting from complications of diabetes.

When the focus is on prevention of disabilities, another group of Americans who face special health risks becomes evident: those who already experience serious and chronic disability. The health promotion and disease prevention needs of people with disabilities are not nullified because they were born with an impairing condition or have experienced a disease or injury that has long-term consequences. In fact, those needs for health promotion are accentuated. People with disabilities are at higher risk of future problems that can only increase the limitations that they experience. For that reason, *Healthy People 2000* addresses people with disabilities as a special population, and where data are available, sets specific targets to address their needs and enhance their health.

Secondary conditions—health problems that arise from, or are related to, the main cause of disability—are common among people with disabilities and are the principal targets of health promotion and disease prevention efforts for this special population. Some, such as decubitus ulcers (pressure sores) and genitourinary disorders, are associated with living conditions linked to the disability, i.e., confinement to a wheel chair or bed. Immobility or inactivity also increases the risk of metabolic, circulatory, respiratory, and musculoskeletal problems.[7] Other secondary health problems can be seen as a progression of the original disabling condition. Diabetes, for example, can lead to serious foot problems and vision impairment.

Many secondary health problems are preventable. For others, the risks can be reduced. For example, pressure sores are a major health risk for all people with spinal cord injuries yet can be prevented through improved health care, properly designed seating, and personal hygiene. Remediable genitourinary tract disorders are also a problem for people whose major motor function is severely restricted. Inadequate health care is implicated in the development of these disorders. Other factors include nutritional disorders, alcohol and drug abuse, inadequate personal hygiene, and acute and chronic illness. Cardiovascular disorders and stroke, brought on by hypertension, nutritional problems, smoking, and lack of physical activity, may be particular problems for people with disabilities.[7]

Musculoskeletal disorders caused by a lack of physical activity and injuries are especially prevalent among people with disabilities. Many respiratory problems for people with disabilities are thought to be preventable. They can result from tobacco use, lack of physical activity, and inadequate immunization.

Alcohol and other drug abuse often are associated with emotional problems. For some people with disabilities, special risks may stem from negative family and cultural attitudes.

As with minority populations, the elements of this report that explicitly call for improvements for people with disabilities are limited by the availability of data with which to set targets. Disabilities vary in their type and their intensity; those with disabilities include all age, racial, and ethnic groups. One of the major challenges of the coming years is to improve our understanding of the needs of the full range of people with disabilities by improving the effectiveness of data systems.

Estimates of the number of people with chronic, significant disabilities vary from 34 million to 43 million. These estimates include the almost 4 percent of the total population of the Nation who are unable to perform their major activity (play, school, work, self-care); about 6 percent whose ability to perform major activities is limited in some fashion; and over 4 percent who are limited in nonmajor activities.[9] Many more people, of course, have impairments that are not yet, but could become, disabling; and still more have chronic conditions, such as hypertension or alcoholism, that can lead to impairment and disability. Many people have several disabling conditions. About 27 percent of people with disabilities report more than one cause of their limited function and over 7 percent report three or more.[9]

Activity limitations are most common among older people, the poor, and those Americans who are less educated. In comparison to the total population, about twice as many people in families with incomes of less than $10,000 a year report major activity limitation. Education too is clearly linked to disability; about 40 percent of people with 8 years or less of education have activity limitations compared to under 11 percent of those with 16 years or more.[9]

The prevalence of disability increases with age, as one would expect (Fig. 3.8). More than one out of every five people aged 65 and older is limited in one or more of his or her major activities, and nearly half of those aged 85 and older need assistance in activities of daily living. On the other hand, people who are under age 65 and living in the community, i.e., not institutionalized, make up about 40 percent of those who need assistance in activities of daily living.[9]

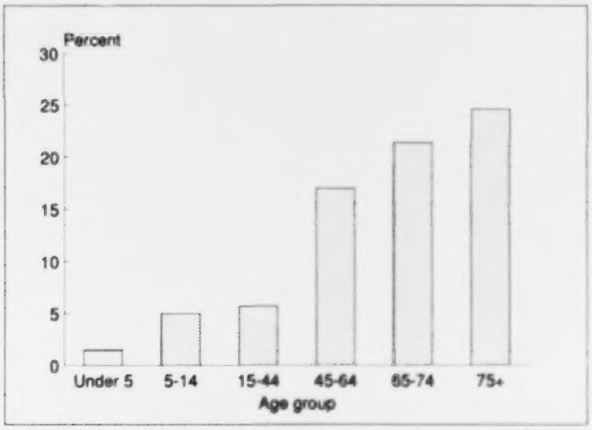

Fig. 3.8

Percentage of people experiencing limitation of major activity, by age (1987)

Source: *Health, United States, 1989 and Prevention Profile*

The major causes of activity limitation vary with age. People under age 18 are most likely to have disabilities associated with mental impairment, asthma, mental illness, deafness and other ear disorders, and speech impairments. Among young adults, orthopedic impairments, such as spinal curvature and other back impairments, are most common, while at older ages degenerative diseases, led by arthritis and heart disease, predominate.[9]

Among ethnic groups, American Indians have the highest rates of activity limitation and Asian and Pacific Islander Americans the lowest.[17] Activity limitations are slightly higher among blacks than among non-Hispanic whites, and both have higher rates of disability than Hispanics.

It is evident from this list that people with disabilities face many of the same risks as other people—nutritional problems, physical inactivity, alcohol and other drug abuse, and stress. But for people with disabilities reducing risks may be a particular challenge. Physical activity, considered especially important in preventing secondary health problems, offers a compelling example. To establish fitness regimens, people with disabilities often need to learn new skills, have access to special equipment, and be part of a support network that enables participation.[7]

Lack of adequate rehabilitation, maintenance therapies, and personal assistance increases the risk of secondary health problems among people with disabilities. Inadequate health insurance, especially among those without access to work-related group insurance, also poses a significant problem for this group.

A clear opportunity exists for health promotion and disease prevention efforts to improve the health prospects and functional independence of people with disabilities. Efforts to adapt existing preventive services and programs are underway. For example, exercise videotapes have been developed for people with paraplegia, quadriplegia, amputation, cerebral palsy, and other physical impairments. Some fitness centers offer modified aerobics, mild exercise in warm water, and other exercises designed to meet the needs of individuals with disabilities. But fitness services are just one of many that are needed. Preventing the occurrence of secondary health problems depends on the availability of a variety of health and social services. Gaps, overlaps, inconsistencies, and inequities in existing programs require the effective coordination of existing services if the health of people with disabilities is to be promoted.[7]

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4. Goals for the Nation

The promise embodied in *Healthy People 2000* involves people in all their variety: age, gender, family relationships, racial and ethnic identity, income level, education, and occupation. It involves birth and death, two sentinel health events. Birth frames the potential for a healthy lifetime; death often summarizes how that potential was used. It involves the values of family, neighborhood, community, and Nation, enabling or undermining the health course that a life takes. It involves an array of risks—some posing apparent, immediate danger and others invisible and delayed in their effects. Finally, it involves medical science and medical care, with their ability to thwart infections, reverse the course of some chronic diseases, and enhance ability to function where limitations exist.

Three overarching goals emerge from the complexity of the health challenge of the 1990s. They permeate the structure and the content of this report. They further define the challenge, especially for health planners, policy-makers, and providers (Fig. 4.1).

- **Increase the span of healthy life for Americans**
- **Reduce health disparities among Americans**
- **Achieve access to preventive services for all Americans**

Fig. 4.1

Healthy People 2000 Goals

Goal I
Increase the Span of Healthy Life for Americans

A central purpose of *Healthy People 2000* is to increase the proportion of Americans who live long and healthy lives. The first goal underlying our strategy for the coming decade clearly states this intention. It encompasses the essential elements of health promotion and disease prevention: prevention of premature death, disability, and disease, and enhancement of the quality of life.

From an individual perspective, healthy life extends into the final quarter of a full century, free from chronic, disabling diseases and conditions, from preventable infections, and from serious injury. It means a full range of functional capacity at each life stage, from infancy through old age, allowing one the ability to enter into satisfying relationships with others, to work, and to play. From a national perspective, healthy life means a vital, creative, and productive citizenry contributing to thriving communities and a thriving Nation.

In the course of this century, average life expectancy at birth has increased by almost 60 percent, from 47 years in 1900 to 75 years in 1987 (Fig. 4.2). This progress has been largely due to the advances of science and public health in conquering life-threatening communicable diseases. The aging of the population and the evolution from communicable diseases to chronic diseases and injuries as the leading causes of death and disability direct our attention to quality of life issues. Both chronic diseases and injuries can be measured by the death certificates that they generate; but the numbers reflecting human suffering and costs associated with heart disease, cancer, nonfatal strokes, diabetes, and lung diseases far outstrip mortality statistics. The results of injury caused both by unintentional trauma and by interpersonal violence are not limited to lives cut short; they also include lives that must overcome brain damage, motor limitations, and other permanent impairments.

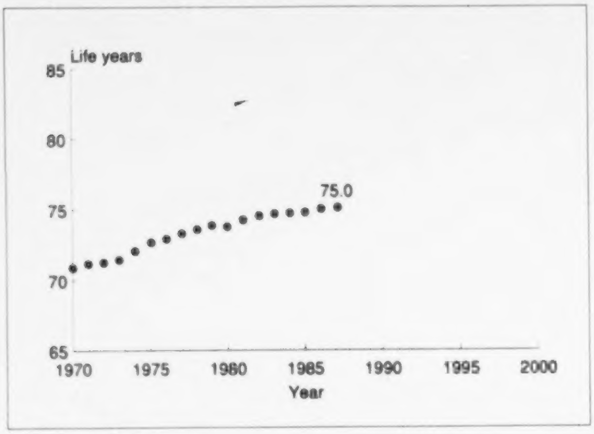

Fig. 4.2

Life expectancy at birth, U.S. population

Source: *Health, United States, 1989 and Prevention Profile*

We can measure our progress in increasing the span of healthy life in several ways. One measure offered here indicates the rate of deaths per 100,000 people before age 75, the approximate average life expectancy at birth in 1990 (Fig. 4.3). Infant mortality, a traditional tool for judging the effectiveness and compassion of health systems, can indicate national progress at the early end of the age spectrum (Fig. 4.4).

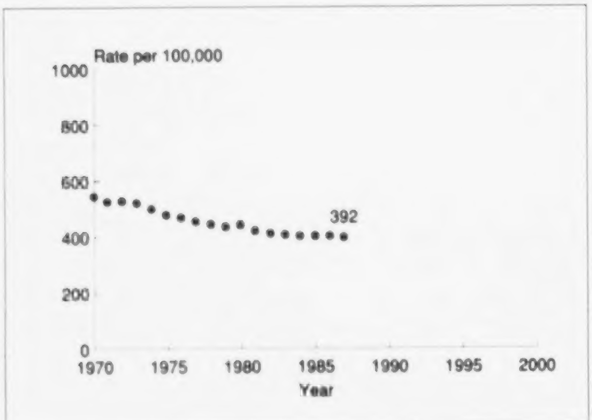

Fig. 4.3

Death rates for people aged 74 and younger, U.S. population (age-adjusted)

Source: National Vital Statistics System (CDC)

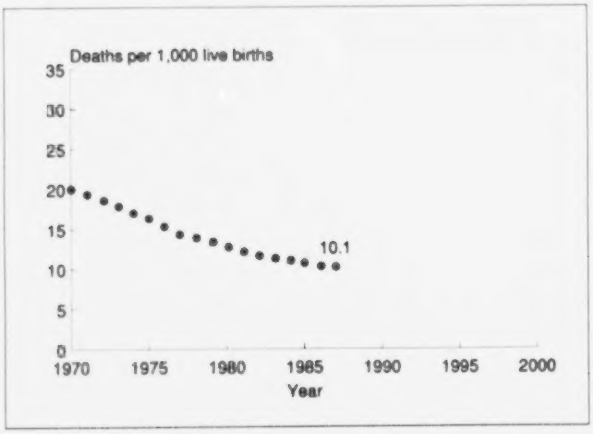

Fig. 4.4

Infant mortality rate, U.S. population

Source: National Vital Statistics System (CDC)

Another measure uses a formula that combines death rates with acute and chronic illnesses, impairments, and handicaps to define average years of healthy life. Using this measure, time spent in a healthy state or years of healthy life can be compared to the average life expectancy at birth. (Fig. 4.5) The difference between these two estimates indicates the average amount of time spent in a dysfunctional state due to either chronic or acute limitation. One major indicator of dysfunction is limitation of major activity due to chronic conditions. (Fig. 4.6) Years of healthy life uses a life expectancy model in which standard life table data are adjusted for level of well-being of a population. Measures of well-being represent individual functioning and include measures of mental, physical, and social functioning. For example, social functioning may be measured in terms of an individual's limitation in performing his or her usual social role, whether this be work, school, or housework; physical functioning may be measured in terms of being confined to bed, chair, or couch due to health reasons, or in terms of health-related limitation in mobility. Because years of healthy life is a relatively new type of measure, the baseline estimates may change. Nonetheless it should prove an informative indicator as we track the Nation's health progress.

Over the course of the decade, we will be able to use each of these measures as indicators of our overall progress in increasing the span of healthy life. To explain the basis for that progress, it is necessary to move beyond the broad goals that are proposed here and look to the priorities for preventive action. Healthy life will be expanded to more years and more Americans as a result of efforts to address the priorities defined in the next chapter.

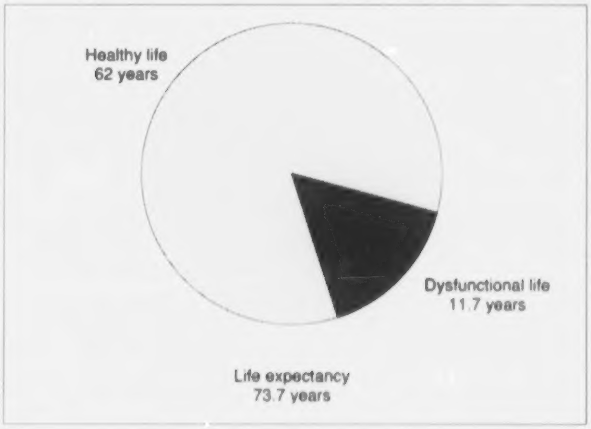

Fig. 4.5

Years of healthy life as a proportion of life expectancy, U.S. population (1980)

Source: National Vital Statistics System and National Health Interview Survey (CDC)

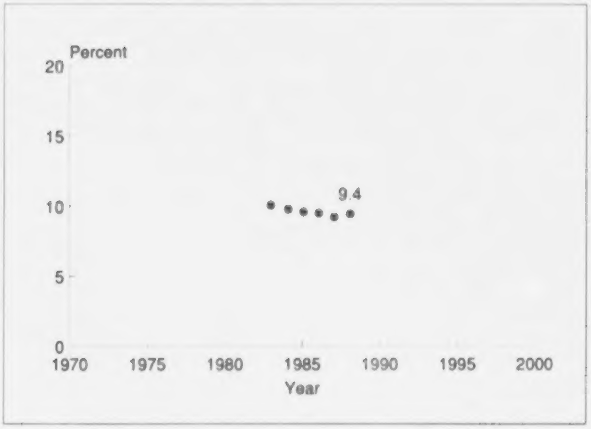

Fig. 4.6

Percentage of people experiencing limitation of major activity, U.S. population (crude rates)

Source: National Health Interview Survey (CDC)

Goal II
Reduce Health Disparities Among Americans

Achieving a healthier America depends on significant improvements in the health of population groups that now are at highest risk of premature death, disease, and disability. The particular health problems of those high risk groups were presented in the previous two chapters. In some instances and for some health risks, they are age groups. In most cases and for virtually all health risks, they are members of certain racial and ethnic groups, people with low income, and people with disabilities. Special attention is needed to close the gap that exists between the majority of the population and the various minority populations. Whether the issue is chronic diseases, infectious diseases, unintentional injuries, or violence-related injuries, the services and protection that might most effectively bring about improvements in their circumstances must be made available.

Although health statistics that take race and ethnicity into account are sparse, the ones that do exist leave no doubt about disparities. The greatest opportunities for improvement and the greatest threats to the future health status of the Nation reside in population groups that have historically been disadvantaged economically, educationally, and politically. These must be our first priority.

Even as average life expectancy at birth edged into the upper 70s, the expected life span for black American male babies born in 1986, 1987, and 1988 actually shrank.[1] The disparities appear across the spectrum of health concerns, not just in average life expectancy. (Fig. 4.7) One perspective on these differences is death rates before age 75 (Fig. 4.8). A particularly sensitive and compelling measure of disparity is infant mortality. Although America's infant mortality rate is at an all-time low, a persistent racial gap remains. Black babies continue to die at twice the rate of white babies (Fig. 4.9).

Another is potential years of life lost before age 65 among white and black men from chronic diseases, calculated as years lost per 1,000 population. In 1987, rates for black men are 55 percent higher for heart disease, 26 percent higher for cancer, 180 percent higher for stroke, and 100 percent higher for lung disease. For homicide, years of potential life lost were 630 percent higher for black men than for white men. Among women of both races, death rates for all causes were lower, but comparisons of premature death of white and black women are equally startling. Lost years of life before age 65 were 134 percent higher among black women for heart disease, 166 percent higher for stroke, and 360 percent higher for homicide.[1] Statistics to compute years of potential life lost are scarce for other racial and ethnic populations, for low-income groups, and for people with disabilities, but analyses of local data from small area studies confirm disparities among these groups as well.

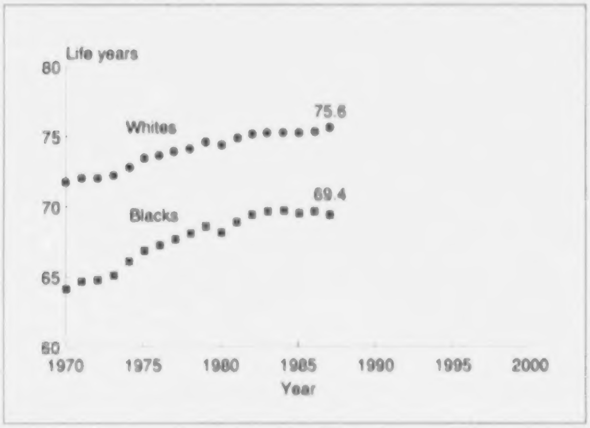

Fig. 4.7

Life expectancy at birth, blacks and whites

Source: *Health, United States, 1989 and Prevention Profile*

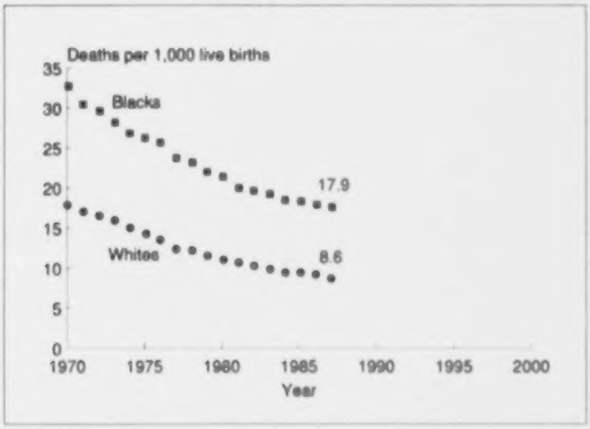

Fig. 4.8

Infant mortality rates, blacks and whites

Source: National Vital Statistics System and National Linked Birth and Infant Death Data Set (CDC)

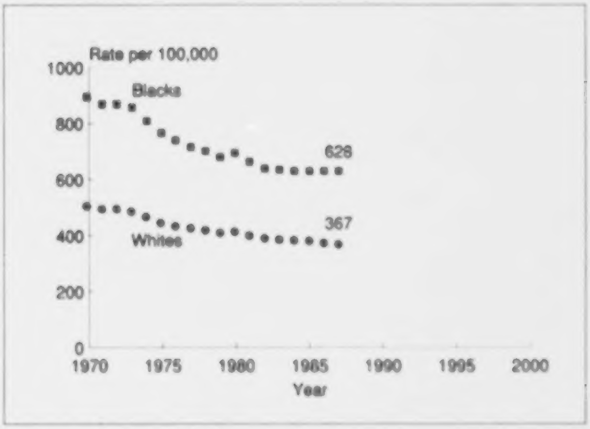

Fig. 4.9

Death rates for people aged 74 and younger, blacks and whites (1987)

Source: National Vital Statistics System (CDC)

Contrasting death rates are mirrored by statistics that depict disability outcome, as well as death. Statistics on years of healthy life reflect the gap between our racial and ethnic groups in the United States (Fig. 4.10). Similarly, rates of disability, measured in terms of limitation of major activity, confirm the fact of inequity in health. The most striking aspect of these comparative rates is the great gap between low-income people and all other groups (Fig. 4.11).

Healthy People 2000 thus calls for special attention to reducing—and finally eliminating—disparities among population groups of Americans. In the priorities for preventive action, this report sets separate, challenging targets when baseline data are available. Usually the targets are sufficient to narrow the gap between the death, disease, or disability rates for population groups and the total population; where trends have been worsening for population groups, targets may appear less challenging but may, in fact, be difficult to achieve because of recent setbacks. In many instances, targets cannot be set in 1990 because measurement tools are not available to provide baselines from which to set realistic, achievable targets for 2000. For this reason, the health status of black Americans, for whom data are most readily available, is used to provide proxy measures of our progress in moving toward the basic goal of equity in health for all our Nation's people.

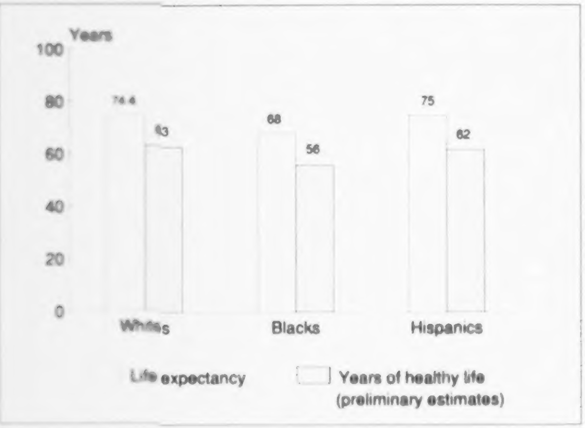

Fig. 4.10

Life expectancy and years of healthy life, whites, blacks, and Hispanics (1980)

Source: Analysis based on data from the National Vital Statistics System (CDC), National Health Interview Survey (CDC), and the U.S. Census Bureau

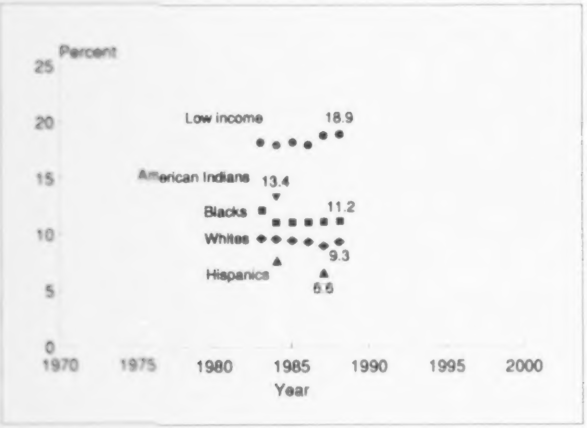

Fig. 4.11

Percentage of people experiencing limitation of major activity, by race and ethnicity (crude rates)

Source: National Health Interview Survey (CDC)

Goal III
Achieve Access to Preventive Services for All Americans

Healthy People 2000 calls for a comprehensive strategy to support the improvements in health that are possible through prevention. This report defines the major parts of that strategy as Health Promotion, Health Protection, and Preventive Services. The priorities for prevention are grouped under these three categories. They are not precise or mutually exclusive categories, but they serve to underscore an important point. Major improvements depend on all three approaches to prevention, not just one. We cannot rely solely on success in persuading people to change their health-related behaviors through health promotion efforts, any more than we can rely solely on environmental improvements or expanded and enhanced clinical interventions.

A health strategy for the 1990s, however, must put particular emphasis on the arena where health professionals in both the private and public sectors have most responsibility, namely the arena of preventive services. Those services, made available to all Americans, can provide the foundation for achievement of other parts of our health strategy. An example, which we will use to track our effectiveness in moving toward this goal, relates to the birth of healthy babies. Prenatal health care is a vital, fundamental ingredient in attaining this sentinel health event (Fig. 4.12). Early and regular prenatal visits to qualified health care providers can ensure greater likelihood that low birth weight and other perinatal complications will be prevented. Prenatal health care services can also serve as a resource and a reinforcer for health promotion efforts that are equally important to healthy pregnancies. The role of prenatal services in education and counseling about parental behaviors, including nutrition, abstinence from tobacco, alcohol, and other drugs, and, even before conception, behaviors that involve risks of sexually transmitted diseases, including HIV infection, is crucial. Likewise, preventive services for pregnant women can serve as the means of monitoring protection against toxic exposures, such as lead, dangerous prescription medications, and radiation.

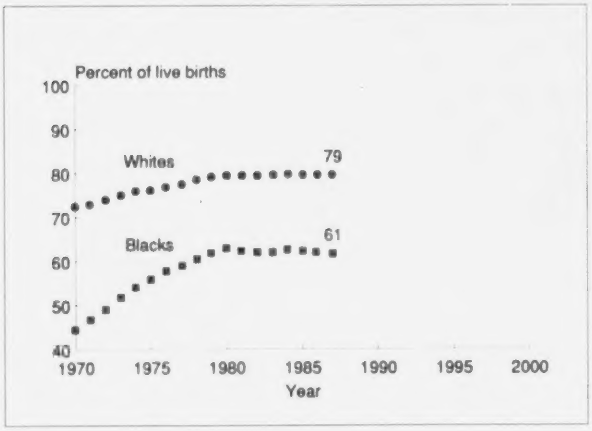

Fig. 4.12

Percentage of pregnant women receiving first trimester prenatal care, blacks and whites

Source: National Vital Statistics System (CDC)

Other preventive services are equally fundamental to our national prevention plan. Basic monitoring of child growth and development; immunization against childhood diseases (Fig. 4.13); appropriate immunization for vulnerable adults against pneumonia and influenza; screening to detect high blood pressure and high blood cholesterol and breast, cervical, oropharyngeal, and colorectal cancers; counseling on nutrition, smoking cessation, and injury prevention; all these services are indispensable parts of prevention. Achievement of this goal clearly requires that health care providers offer, and patients receive, these services. Objectives throughout this report focus on increasing the proportion of primary care providers who routinely offer preventive services to their patients.

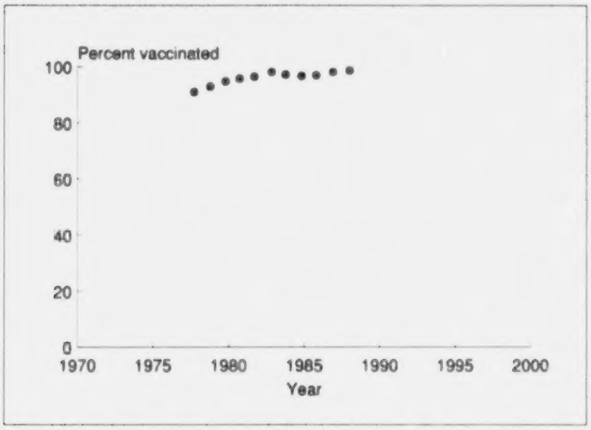

Fig. 4.13

Percentage of children immunized by time of school entry

Source: Center for Prevention Services, CDC

Access to preventive services involves more than just availability of services. Preventive services cannot, and should not, be separated from basic primary health care. Approximately 18 percent of all Americans and 31 percent of those without either private or public health insurance have no source of primary health care. (Fig. 4.14) Thus, tracking of progress to achieve access to preventive services over the coming decade must focus on increases in the number of people who have a primary source of health care and those who have adequate insurance coverage (Fig. 4.15), with particular attention to the extension of health insurance and managed health care systems to cover preventive services such as immunizations, screening, and patient education and counseling.

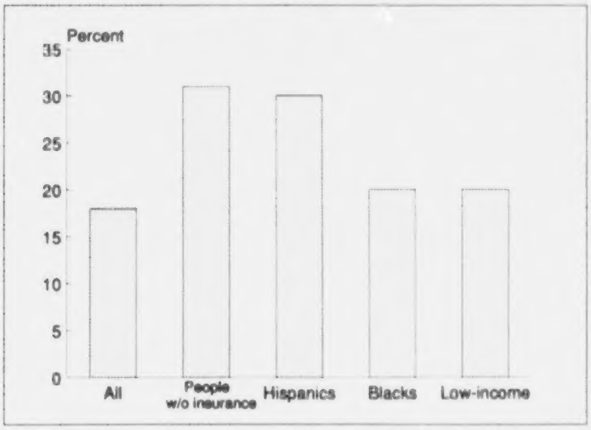

Fig. 4.14

Percentage of people who lack a source of primary care (1986)

Source: Robert Wood Johnson Foundation

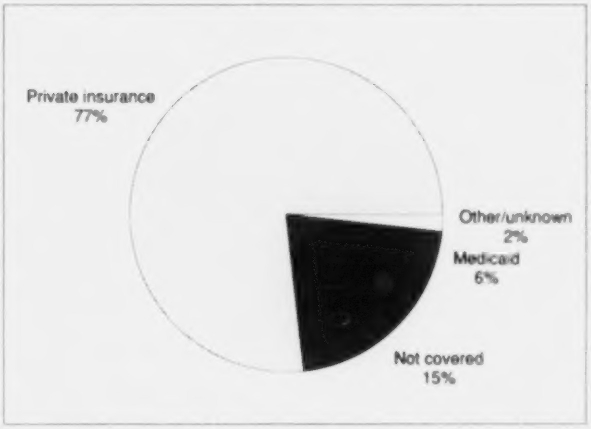

Fig. 4.15

Health insurance coverage for people aged 64 and younger, by type of coverage (1986)

Source: Based on *Health, United States, 1989 and Prevention Profile*

Note: Percent distribution approximate due to overlap among categories.

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These three goals—healthy lives for more Americans, elimination of disparities among population groups, access to necessary preventive services for everyone—are our broad national aspirations for health improvements. They can serve as a shared set of values that underpin all of our health promotion and disease prevention work. They can inform our public policy, whether at the Federal, State, or local levels. But taken alone, they do not provide us with adequate direction to guide actual decisions about programs, resource allocation, or professional and personal commitments. The goals are insufficient, unless they are buttressed by a framework of specific and substantive preventive actions that will move us steadily in the direction of their achievement. The next chapter lays out the specifics of the *Healthy People 2000* plan and gives substance to the goals for the Nation.

Reference

[1] National Center for Health Statistics. *Health, United States, 1989 and Prevention Profile*. DHHS Pub. No. (PHS)90-1232. Hyattsville, MD: U.S. Department of Health and Human Services, 1990.

5. Priorities for Health Promotion and Disease Prevention

Healthy People 2000 is a platform for action. The information it contains may be interesting; the statistical data on which it is based may be analytically useful; and the objectives-oriented structure that it employs may serve as a practical model for other planning endeavors. But its value must finally be judged by how well it helps to shape what we do to improve the health of the Nation in the coming decade.

This chapter summarizes the priorities for preventive action. Organized in three basic categories—Health Promotion, Health Protection, and Preventive Services—it outlines specific behavioral risks, disease conditions, and health outcomes that must be effectively addressed in the coming years if we are to take advantage of our opportunities for better health. In addition, a cross-cutting priority that supports each of the others is improvement of our surveillance and data systems to foster more effective decision-making.

Each specific priority is summarized in the following pages, together with representative health objectives drawn from Part II of *Healthy People 2000*. These representative objectives serve as abbreviated examples of the measurable targets that are more fully stated and discussed in greater detail in Part II. While they cannot completely summarize all aspects of the health improvements, risk reductions, and service enhancements that are contained in the chapters of Part II, these examples demonstrate the magnitude and importance of the change envisioned in *Healthy People 2000*.

Health Promotion

Physical Activity and Fitness

Nutrition

Tobacco

Alcohol and Other Drugs

Family Planning

Mental Health and Mental Disorders

Violent and Abusive Behavior

Educational and Community-Based Programs

Physical Activity and Fitness

Regular physical activity increases life expectancy,[74] can help older adults maintain functional independence, and enhances quality of life at each stage of life.[33] The beneficial impact of physical activity touches widely on various diseases and conditions. Regular physical activity can help to prevent and manage coronary heart disease, hypertension, diabetes, osteoporosis, and depression.[26] It has also been associated with a lower rate of colon cancer[77] and stroke[83], and may be linked to reduced back injury.[8] It is an essential component of weight loss programs.

Physical activity is a complex behavior and its relationship with health is multifaceted. Regular vigorous physical activity promotes cardiorespiratory fitness and helps prevent coronary heart disease.[5,75] Activity that builds muscular strength, endurance, and flexibility may protect against injury and disability. And any activity that expends energy is important in weight control. Physical activity can also produce changes in blood pressure, blood lipids, clotting factors, and glucose tolerance, that may help prevent and control high blood pressure, coronary heart disease and diabetes.[38]

While activity should be habitual, it need not be unduly strenuous. People who engage daily in light to moderate exercise, equivalent to sustained walking for about 30 minutes a day, can achieve substantial health gains. Increasing evidence suggests that even small increases in light to moderate activity by those who are least active will produce measurable health benefits.[39,82]

Of particular importance is the role of physical activity in preventing coronary heart disease, the leading cause of death in the United States. A sedentary lifestyle appears to be an independent risk factor for coronary heart disease, nearly doubling a person's risk.[78] Its effect on coronary heart disease risk is almost as great as the better known risk factors, such as cigarette smoking and high blood pressure. Because more people are at risk of coronary heart disease due to physical inactivity than to any other single risk factor, it has an especially great public health impact.

Few Americans engage in regular physical activity despite the potential benefits. Currently, only 22 percent of adults engage in at least 30 minutes of light to moderate physical activity 5 or more times per week, and only 12 percent report that they are this active 7 or more times a week. Less than 10 percent of the population exercises 3 or more times a week at the more vigorous level necessary to improve cardiorespiratory fitness. Nearly 25 percent of adults report no leisure-time physical activity, and the prevalence of sedentary behavior increases with advancing age.

To increase physical activity and fitness, by the year 2000...

1.3 Increase moderate daily physical activity to at least 30% of people (a 36% increase)

1.5 Reduce sedentary lifestyles to no more than 15% of people (a 38% decrease)

Other objectives target sustained combined changes in diet and activity patterns for those who are overweight; physical education in schools; sponsorship by employers of worksite physical activity programs; increasing accessibility of community resources like trails and pools; and a stronger focus by primary care providers on the physical activity patterns of their patients.

Nutrition

In ways often interrelated with patterns of physical inactivity, dietary factors are associated with 5 of the 10 leading causes of death in the United States: coronary heart disease, some types of cancer, stroke, noninsulin-dependent diabetes mellitus, and atherosclerosis. The 1988 *Surgeon General's Report on Nutrition and Health*[79] found that for the 2 out of 3 Americans who neither smoke nor drink, eating patterns may shape their long-term health prospects more than any other personal choice. In general, excesses and imbalances of some food components in the diet have replaced once-prevalent nutrient deficiencies as the principal concern.

While many dietary components are involved in diet and health relationships, chief among them is the disproportionate consumption of foods high in fats (especially saturated fats), often at the expense of foods high in complex carbohydrates and dietary fiber that may be more conducive to health.[79] To help promote health and prevent chronic disease, the *Dietary Guidelines for Americans*,[91] issued by the United States Departments of Health and Human Services and Agriculture, recommend one should eat a variety of foods; maintain healthy weight; choose a diet low in fat, saturated fat, and cholesterol; choose a diet with plenty of vegetables, fruits, and grain products; use sugars only in moderation; use salt and sodium only in moderation; and, if alcoholic beverages are consumed, do so in moderation.

Overweight affects about 26 percent of the population. It is a particular problem for poor and minority populations, affecting 44 percent of black women over age 20 and 37 percent of all women below the poverty level. Obesity has been linked to increased risk for diabetes mellitus, high blood pressure and stroke, coronary heart disease, some types of cancer, and gallbladder disease.[79]

Dietary fat contributes more than twice as many calories per unit of weight as carbohydrate or protein, and currently constitutes 36 percent of the calories in the average American diet. Considerable evidence associates diets high in fat with increased risk of obesity, some types of cancer, and possibly gallbladder disease.[79] Strong and consistent evidence relates saturated fat intake to high blood cholesterol and increased risk for coronary heart disease. Moreover, Americans eat only about half of the dietary fiber recommended by the National Cancer Institute to help reduce the risk for some types of cancer. Dietary fiber is readily available from a variety of foods such as vegetables, fruits, and grains, which are also low in fat.

To improve nutrition, by the year 2000...

2.3 **Reduce overweight to a prevalence of no more than 20% of people (a 23% decrease)**

2.5 **Reduce dietary fat intake to an average of 30% of calories (a 17% decrease)**

Other objectives target increasing consumption of vegetables, fruits, and grain products; decreasing sodium consumption; increasing calcium intake, in particular for young people and pregnant or lactating women; increasing breastfeeding; reducing iron deficiency and growth retardation in children; useful and informative nutrition labeling for all food products; increasing availability of low-fat products; better identification of low-fat, low-calorie food choices in restaurants; more attention to nutrition education and food choices in schools; better use of worksites for nutrition education and services; and a stronger focus by primary care providers on the nutritional practices of their patients.

Tobacco

Tobacco use is the most important single preventable cause of death in the United States, accounting for one of every six deaths, or some 390,000 deaths annually.[73] It is a major risk factor for diseases of the heart and blood vessels; chronic bronchitis and emphysema; cancers of the lung, larynx, pharynx, oral cavity, esophagus, pancreas, and bladder; and other problems such as respiratory infections and stomach ulcers.[73] Cigarette smoking is responsible for an estimated 21 percent of all coronary heart disease deaths (40 percent of those under age 65), 30 percent of all cancer deaths, and 87 percent of lung cancer deaths in the United States. The risk of dying from lung cancer is 22 times higher for men and 12 times higher for women who smoke than for lifetime nonsmokers. Passive or involuntary smoking causes lung cancer and other diseases in healthy nonsmokers and severe respiratory problems in children. Middle ear infections in children have been linked to passive smoking.

Cigarette smoking during pregnancy is a risk factor for low birth weight, prematurity, miscarriage, sudden infant death syndrome, and other maternal and infant health problems. Between 20 and 30 percent of the incidence of low birth weight,[36] up to 14 percent of preterm deliveries, and about 10 percent of all infant deaths are attributable to maternal cigarette smoking.[73] Yet 25 percent of pregnant women smoke throughout their pregnancy.[50]

Cigarette smoking has declined dramatically since 1964, when the first Surgeon General's report on smoking appeared. In 1987, 29 percent of adults smoked compared to 40 percent in 1965. Nearly half of all living adults who ever smoked have quit. Nevertheless, smoking rates remain high in certain populations, including blacks, blue collar workers, and people with fewer years of education. In 1987, 34 percent of blacks smoked.[73] Smoking is a special problem for workers with exposure to hazardous substances that may compound the risk.

Among youth, more than half of 8th graders and nearly two-thirds of 10th graders report having tried cigarettes.[4] More than one-fourth of 10th graders report having smoked a cigarette during the preceding month and nearly one in five reports smoking a pack or more in the previous month.

To reduce use of tobacco, by the year 2000...

3.4 Reduce cigarette smoking prevalence to no more than 15% of adults (a 48% decrease)

3.5 Reduce initiation of smoking to no more than 15% by age 20 (a 50% decrease)

Other objectives target reducing lung cancer and chronic obstructive lung disease deaths; increasing smoking cessation during pregnancy; reducing use of smokeless tobacco; prevention education and tobacco-free environments in schools; restrictions on smoking in the workplace and other public places; enforcement of prohibition of sales of tobacco products to youth; restrictions on tobacco advertising and promotion targeting youth; State plans to reduce tobacco use; and more smoking cessation assistance to patients by primary care providers.

Alcohol and Other Drugs

Approximately two-thirds of American adults drink alcohol at least occasionally. Of these, it is estimated that about 18 million currently experience problems as a result of alcohol use, and about 7 percent of drinkers experience moderate levels of dependence symptoms.[65] Alcohol is a factor in approximately half of all homicides, suicides, and motor vehicle fatalities.[76] With fetal alcohol syndrome affecting as many as 3 infants per 1,000 live births in some hospital reports, it is the leading preventable cause of birth defects.[65] Alcohol is also responsible for numerous deaths due to liver disease. Of special concern are the problems for young people. Nine out of ten high school seniors report using alcohol at least once.

Drug use is also a dominant societal concern. Surveys in 1988 found that 21 million Americans had used cocaine at least once, and 21 million also had used marijuana in the last year.[63] Among high school seniors, almost 44 percent report having tried marijuana, and 10 percent report ever using cocaine.[45] It has been estimated that one in four American adolescents is at very high risk of alcohol and other drug problems and their consequences.[20] The data may underestimate the problem because existing surveys fail to count high risk youth who have dropped out of school. Drug abuse is linked to high rates of violent crime in the Nation, to transmission of the HIV virus, and to developmental problems in infants.

These are the immediate health problems posed by alcohol and other drugs. Their abuse, however, is closely related to a host of other social and health problems, such as early unwanted pregnancy, delinquency, and school failure. The economic cost of problems attendant to alcohol abuse was estimated in 1990 to be $70 billion, and another $44 billion for drug problems.[27,80] Alcohol and other drug abuse appears to be declining across the total population. Use of crack cocaine, however, is on the rise, especially in some urban centers. Homeless people are at special risk of alcohol abuse.[64]

In the past decade, public awareness of this problem grew, uniting diverse groups in the common goal. Businesses, schools, parent groups, and minority organizations have developed ways to fight the pervasive dangers of alcohol and other drugs. A changing social climate has been accompanied by legislative and policy actions, particularly concerning drinking and driving.

To reduce alcohol and other drug abuse, by the year 2000...

4.1 Reduce alcohol-related motor vehicle crash deaths to no more than 8.5 per 100,000 people (age adjusted)
(a 12% decrease)

4.6 Reduce alcohol use by school children aged 12 to 17 to less than 13%; marijuana use by youth aged 18 to 25 to less than 8%; and cocaine use by youth aged 18 to 25 to less than 3%
(50% decreases)

Other objectives target increasing the average age of first use of addictive substances; reducing occasions of heavy drinking by young people; reducing aggregate per capita alcohol consumption nationally; increasing awareness of the harmful effects of addictive substances; better access to treatment programs; stronger and better enforced laws related to driving under the influence of intoxicants; better access of workers to assistance for problems; policies to reduce minors' access to alcohol; and greater involvement of primary care providers in dealing with these problems.

Family Planning

Families are the bedrock of our society. Decisions about forming a family are of critical importance. Decisions made today may have long-term consequences. Safe and healthful childbearing both contributes to, and is a result of, effective family planning. Miscarriage, stillbirth, and infant mortality are tragic examples of problems that occur more frequently as a result of family planning failures. Family planning is defined here as the process of establishing the preferred number and spacing of children in one's family and selecting the means by which these preferences are achieved. It presupposes the importance of family and the importance of planning. It requires that fundamental questions be addressed concerning an individual's relationship to the lives, health, and well-being of others.

Successful implementation of family planning choices requires mature, thoughtful decisions accompanied by motivation to carry out those decisions. It requires the exercise of personal responsibility. There are many effective means by which family planning choices can be implemented. Childbearing, adoption, abstinence from sexual activity outside of a monogamous relationship, use of contraception methods, natural family planning, and treatment of infertility are all means of reaching desired family planning goals.

Despite the fundamental importance of these decisions to each individual and to society as a whole, problems attendant to poor family planning exert a tremendous toll on our Nation. In 1988, nearly half of American women surveyed reported that their pregnancies in the last 5 years had been mistimed or unwanted—56 percent if adjustment is made for unreported abortions.[69]

The problem is most pressing among young people. More than three out of four young women and 85 percent of young men have had sexual intercourse by age 20.[69,87] Each year, one out of ten young women in this age group becomes pregnant. By age 20, approximately 40 percent of all women have been pregnant while 63 percent of black women have been pregnant.[90] An estimated 84 percent of these pregnancies were unintended,[32] and abortion rates among American teenagers are considerably higher than for many other countries.

To improve family planning, by the year 2000...

5.1 **Reduce teenage pregnancies to no more than 50 per 1,000 girls aged 17 and younger**
(a 30% decrease)

5.2 **Reduce unintended pregnances to no more than 30% of pregnancies**
(a 46% decrease)

Other objectives target reducing sexual intercourse among teenagers; reducing nonuse of contraceptives among those who are unmarried and sexually active; increasing effectiveness with which contraceptives are used; improving communication between adolescents and parents on human sexuality; increasing availability of appropriate preconception counseling; increasing referral rates to appropriate services; increasing availability of information on adoption for unmarried pregnant patients; and reducing rates of infertility.

Mental Health and Mental Disorders

Mental health refers to an individual's ability to negotiate the daily challenges and social interactions of life, without experiencing undue emotional or behavioral incapacity. It can be affected by numerous factors ranging from exogenous stresses presenting in ways that may be difficult to manage to organic disease or genetic defects that impair brain function. An estimated 23 million noninstitutionalized adults in the United States have cognitive, emotional, or behavioral disorders, not including alcohol and other drug abuse. Schizophrenic disorders most often result in functional disabilities, but depression is the most common of the major disorders, affecting about 5 percent of the population at any one time.

Suicide is clearly the most serious of the potential outcomes of these disorders and it claims more than 30,000 lives each year.[70] Injuries from firearms are directly responsible for a majority of suicidal deaths, and much of the increase in suicide that has taken place since the 1950s is specific to firearm deaths.[6,46] There has been a steady increase in deaths from suicide among youth aged 15 to 19, and by the mid-1980s suicide was the second leading cause of death in this age group.

A variety of approaches have been proposed to reduce the impact of mental health problems. Stress, whether stemming from life events, chronic strain, or environmental pressures, is associated with biological changes linked to cognitive, emotional, and behavioral dysfunctions. Healthful habits, such as good nutrition and adequate amounts of exercise, and relaxation techniques may be useful in helping to relieve stress. Because people with low levels of control over their environment (actual or perceived) appear to be at greater risk, interventions have also been directed at increasing individuals' resources and coping skills through education and social support. For those needing more aggressive attention, medical interventions are available that include antidepression drugs, psychotherapeutic agents, and biofeedback.

Childhood developmental delays and specific skill disorders have also been linked to learning and adjustment problems in adolescence and early adulthood. Early interventions with parents and children that address prenatal care, parental skills, and remedial help in early school programs may help prevent developmental problems and their progression to mental health problems.

To improve mental health and prevent mental disorders, by the year 2000...

6.1 Reduce suicides to no more than 10.5 per 100,000 people (a 10% decrease)

6.5 Reduce adverse effects of stress to less than 35% of people (an 18% decrease)

Other objectives target reducing prevalence of mental disorders; increasing utilization of community support programs; increasing treatment for those with major depressive disorders; increasing use of broad social support mechanisms for those with trouble coping; more attention by employers to services related to managing employee stress; better access to mutual-help clearinghouses; and more attention by primary care providers to the cognitive, emotional, and behavioral needs of their patients.

Violent and Abusive Behavior

Violent and abusive behavior (intentional injury) exacts a large toll on the physical and mental health of Americans. Child abuse, spouse abuse, and other forms of intrafamilial violence continue to threaten the health of thousands of American families. Homicide and suicide account for over one-third of the more than 145,000 injury deaths that occur in the United States each year. Because of its growing prominence as a source of the leading health problems experienced by Americans, violent and abusive behavior has been increasingly recognized as an important public health problem.

Homicide is the 11th leading cause of death in the United States, accounting for nearly 21,000 deaths in 1987.[51] Men, teenagers, young adults, and minority group members, particularly blacks and Hispanics, are most likely to be murder victims. It is the leading cause of death for blacks between the ages of 15 and 34.[13] Overall homicide rates for blacks have declined since 1970, while the rates for whites have increased.[13] Most homicides are committed with a firearm, occur during an argument, and occur among people who are acquainted with one another. Homicide rates in the United States far exceed those of any other developed country.

Assault injuries are another consequence of interpersonal violence. Each year between 1979 and 1986 more than 2.2 million people suffered nonfatal injuries from violent and abusive behavior. Of these injured victims, 1 million received medical care and 500,000 were treated by emergency medical facilities.[25] More than 25 percent of the Nation's 10,000 to 15,000 spinal cord injuries each year are the result of assaultive violence. Firearms account for 60 percent of all homicides and suicides, and a substantial proportion of all traumatic spinal cord injuries.[44]

Intrafamilial violence is more prevalent than often recognized. In 1986 an estimated 1.6 million children nationwide experienced some form of abuse or neglect.[95] Physical abuse accounted for the greatest portion of abuse incidents, followed by emotional and then sexual abuse. Studies also suggest that between 2 and 4 million women are physically battered each year by partners including husbands, former husbands, boyfriends, and lovers. Between 21 and 30 percent of all women in the United States are estimated to have been beaten by a partner at least once. More than 1 million women seek medical assistance for injuries caused by battering each year, and the vast majority of domestic homicides are preceded by episodes of violence.[56]

To reduce violent and abusive behavior, by the year 2000...

7.1 Reduce homicides to no more than 7.2 per 100,000 people (a 15% decrease)

7.6 Reduce assault injuries to no more than 10 per 1,000 people (a 10% decrease)

Other objectives target reducing weapon-related injury deaths; reducing child and spouse abuse, reducing rape; reducing weapon-carrying by adolescents; reducing inappropriate storage of weapons; improving emergency treatment, housing, and referral services for battered women, children, and older people; improving school programs for conflict resolution; and strengthening State-based efforts in violence prevention.

Educational and Community-Based Programs

A supportive social environment may be the most important factor in changing behaviors that contribute to many of today's leading health threats. Consequently activity and leadership at the community level is fundamental to progress. Educational and community-based programs, developed to reach people outside of traditional health care settings, may address one risk factor in one setting, but increasingly they use multiple interventions in a variety of settings.

Many involve various sectors and levels of society. Changes in the social and physical environment call for the involvement of social institutions, businesses, legislative and judicial bodies, the media, and other parts of the community. Because comprehensive, communitywide programs aim to draw upon and become involved in as many aspects of community life as possible, they require a high degree of cooperation and coordination between groups that are often not traditional partners: environmental citizen groups and manufacturers, health professionals and churches, employers and hospitals. Important to the success of these partnerships are information networks and coordinating mechanisms, both of which can help streamline services and interventions.

Schools offer a natural locus for the provision of crosscutting educational interventions in health, and studies have shown that school health education is an effective means of helping children improve their health knowledge and develop attitudes that facilitate healthier behaviors. Yet only 25 States currently mandate comprehensive school health education programs, and implementation is spotty in even these States.

Similarly, the workplace can be an excellent site for health promotion programs. More than 85 percent of adult Americans spend much of their day at their workplace. Numerous studies have shown the benefits of worksite health promotion programs in improving employee health, reducing insurance claims, improving morale, reducing absenteeism, and reducing employee turnover. Among workplaces with more than 50 employees, about two-thirds report offering at least one health promotion activity.[71] A much smaller share offers a comprehensive package to employees, and even fewer include special activities for family members or retirees.

To enhance educational and community-based programs, by the year 2000...

8.4 **Provide quality K-12 school health education in at least 75% of schools**

8.6 **Provide employee health promotion activities in at least 85% of workplaces with 50 or more employees**
(a 31% increase)

Other objectives target increasing reading levels and high school graduation rates; increasing preschool programs for disadvantaged children; strengthening the public health system; increasing accessibility of health promotion programs for older people; development of broad State-based strategies for health promotion; and stronger focus on the health promotion needs of minorities.

Health Protection

Unintentional Injuries

Occupational Safety and Health

Environmental Health

Food and Drug Safety

Oral Health

Unintentional Injuries

Unintentional injuries are the fourth leading cause of death in the United States, killing about 100,000 people a year, and are a major cause of disability.[51] Nonfatal injuries are responsible for one of every six hospital days and one of every 10 hospital discharges.[81] Nearly two-thirds of all injury deaths and 84 percent of all injuries resulting in hospitalization involve unintentional injuries. Motor vehicle crashes account for approximately one-half of the deaths from unintentional injuries. Deaths from falls rank second, followed by deaths from poisoning, drowning, and residential fires.[17]

At highest risk are the young and older adults. During the first four decades of life injuries account for more deaths than either chronic or infectious diseases, taking more than 2 million potential years of life from Americans every year. Males are more than twice as likely to die from unintentional injuries than females, and blacks have higher death rates than whites.[51] American Indian and Alaska Natives have disproportionately higher injury death rates.[30]

Injuries have been estimated to cost the United States more than $100 billion annually due to lost productivity and medical care, with a third of these costs attributable to falls and 28 percent to motor vehicle crashes.[81]

About 46,000 people die and 3,500,000 people are injured annually in motor vehicle crashes. By themselves, motor vehicle crashes rank as the fifth leading cause of death in the United States, and approximately half of these are alcohol-related. Alcohol-related traffic crashes are the leading cause of death and spinal cord injury for young Americans.[60]

Although use of automobile safety restraints has increased in recent years, only 42 percent of people currently report using them. Increasing this share to 85 percent could save about 10,000 lives per year. Given the fact that almost 30 percent of motor vehicle fatalities are related to motorcycle, pedestrian, and bicycle casualities, increasing helmet use could also prove of substantial benefit.[61,62]

Many injuries are multifactorial in nature. Alcohol use is a factor in numerous unintentional injuries, including about half of all motor vehicle fatalities and a sizable share of drownings. Of the 33,000 firearm-related deaths in 1987, nearly 3,400 were children aged 1 through 19.[14] Of these, about 15 percent were unintentional and often due to improper handling, accessibility to children, and lack of safety mechanisms.[14] Progress in reducing unintentional injuries will require full participation of the fields of education, transportation, law, engineering, architecture, and safety sciences.

To reduce unintentional injuries, by the year 2000...

9.1 Reduce unintentional injury deaths to no more than 29.3 per 100,000 people
(a 15% decrease)

9.12 Increase automobile safety restraint use to at least 85% of occupants
(a 102% increase)

Other objectives target death from motor vehicle crashes, falls, drownings, and residential fires; occurrence of hip fractures, poisonings, head injuries, and spinal cord injuries; use of protective helmets; extension of safety belt and motorcycle helmet use laws; handgun design; expanded installation of fire sprinklers and smoke detectors; better roadway design and markers; injury prevention instruction in schools; and involvement of primary care providers in counseling on safety.

Occupational Safety and Health

Approximately 110 million people make up the American workforce, with most spending major portions of their days in their work environments. Of the estimated 10 million injuries that occur annually among workers, about 3 million are severe and include some 3,400 to 11,000 deaths. Although the number of fatal occupational injuries has gradually declined in recent years, work-related illnesses and nonfatal injuries appear to be increasing. During 1987, permanent impairments suffered on the job grew from 60,000 to 70,000, total disabling injuries numbered 1.8 million, and combined occupational illnesses and injuries in the manufacturing industries increased by 12 percent.[7]

Approximately 40 percent of work-related fatalities involved people between 25 and 44 years old. More than 20 percent of fatal occupational injuries in the mid-1980s involved highway vehicles, which were the leading cause of death in seven of eight industry divisions. Other causes included falls (13 percent), nonhighway industrial vehicular injuries (11 percent), blows other than by vehicles or equipment (8 percent), and electrocutions (7 percent). Other leading work-related problems include occupational lung diseases, musculoskeletal injuries, and occupational cancers.[7]

Those occupations with relatively higher rates of injury include mining, agriculture, construction, manufacturing, trucking, and warehousing. The largest numbers (as opposed to rates) of injuries occur in industries with large total workforces such as eating and drinking establishments, grocery stores, hospitals, trucking companies, nursing homes, department stores, and hotels/motels. While employees in occupations related to these enterprises comprise about one-fifth of the total workforce, they report one-fourth of the injuries.[7]

Prevention of occupational health hazards rests on the basic principles of control technology: engineering controls, work practices, personal protective equipment, and monitoring of the workplace for emerging hazards. Despite the number of occupational injuries, effective prevention is practiced in many workplaces, and approximately 48 percent of all establishments report no injuries in a given year.

To improve occupational safety and health, by the year 2000...

10.1 Reduce work-related injury deaths to no more than 4 per 100,000 workers (a 33% decrease)

10.2 Reduce work-related injuries to no more than 6 per 100 workers (a 22% decrease)

Other objectives target reductions in cumulative trauma disorders (e.g., from repetitive motion, pressure, or noise), occupational skin disorders, and, among health workers, hepatitis B infection; use of occupant protection systems by workers; reducing workplace exposure to lead; State implementation of plans for identification and control of major work-related illnesses and injuries; State standards to prevent work-related lung disease; increasing worksites with formal plans for worker health and safety, including back injury prevention programs; expanded State assistance to small businesses in implementation of worker health and safety programs; and greater attention by primary health care providers to occupational health exposures.

Environmental Health

Environmental measures have long been a mainstay of public health. State and local efforts to assure safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed substantially to public health improvements in the United States. The most difficult challenges for environmental health today come from uncertainties about the toxic and ecologic effects of the use of fossil fuels and synthetic chemicals in modern society. An estimated 82 percent of major industrial chemicals have not been tested for their toxic properties and links to specific diseases, and only a small proportion of chemicals have been adequately tested for their ability to cause or promote cancer.[68] Still, enough is known to target improvement in several areas.

Exposure to lead, air pollutants, and radon are good examples. Exposure to high levels of lead is toxic to the central nervous system and can be fatal. Even low levels of exposure can result in persistent impairments in central nervous system function, especially in children, including delayed learning, impaired hearing, and growth deficits. Yet an estimated 2 out of 3 poor inner-city black children aged 6 months through 5 years have blood lead levels above 15 µg/dL and 1 out of 10 has levels above 25 µg/dL. For the Nation as a whole, nearly 3 million children are at some risk from elevated lead levels.[1] Decreased levels of lead in gasoline, air, and food and releases from industrial sources have resulted in lower mean blood lead levels. However, lead in paint, dust, and soil in inner-city urban areas has been lowered only to a limited extent. A strong national effort is needed to reduce lead in the home environment.

Airborne pollutants have been shown to contribute to lung diseases, bronchial asthma, cancer, neural disorders, and eye irritation.[21] Standards have been set by the Environmental Protection Agency for ozone, carbon monoxide, particulates, sulfur dioxide, nitrogen dioxide, and lead. Air quality has improved greatly since 1970, but in 1988 less than 50 percent of Americans lived in counties that met all the EPA standards for air quality for the previous 12 months.[22] Additional measures are necessary to reduce contamination from motor vehicles and other sources.

Radon comes from rock and soil, enters buildings through cracks in foundations or basements, and when inhaled releases ionizing radiation that can damage lung tissue and lead to lung cancer. Along with tobacco smoke, it is a leading indoor air hazard, and as many as an estimated 8 million homes may have radon at a level requiring correction.[21] Low-cost test kits are available to identify exposures, but only about 5 percent of homes have been tested.[72]

To improve environmental health, by the year 2000...

11.4 Eliminate blood lead levels above 25 µg/dL in children under age 5

**11.5 Increase protection from air pollutants so that at least 85% of people live in counties that meet EPA standards
(a 71% increase)**

**11.6 Increase protection from radon so that at least 40% of people live in homes tested by homeowners and found to be/made safe
(a 700% increase)**

Other objectives target reducing infectious agent and chemical contamination of drinking water supplies and surface water; reducing human exposure to toxic agents released into the air, water, and soil; reducing environmental burden of solid waste contamination; eliminating immediate risks from hazardous waste sites; improving household management of recyclable materials and toxic waste materials; and better State-based systems to track environmental exposures and diseases.

Food and Drug Safety

American consumers currently benefit from extensive food and drug safety assurance systems. Microbial contamination of food in the production process is rare. Inspections of foods for pesticide residues consistently find that between 96 and 98 percent of foods tested do not contain pesticides in excess of legal limits—and those limits are typically set with a wide margin for error, 100 to 1,000 times lower than a level causing toxic effects in animals.[23] Similarly, careful procedures are established to test new drugs, and each year FDA officials inspect one-third of 18,000 drug and biologics establishments in the United States to ensure proper manufacture and handling.[24]

Nevertheless, outbreaks of foodborne disease and incidents involving drugs continue to occur and cause illness or death. Some problems are caused by failures in the protective systems established at the Federal, State, and local levels. In many cases, problems are caused by foods improperly handled by consumers, the misuse of a prescribed drug, and drug interactions that occur when different health care providers unknowingly prescribe different drugs for the same patient.

Based on the number and severity of cases that occur, *Salmonella*, *Campylobacter*, *Escherichia coli*, and *Listeria* are four of the most important foodborne pathogens in the United States—largely related to time and temperature abuse of foods. One problem that has increased markedly over the decade of the 1980s is illness due to infection with *Salmonella enteritidis*. This foodborne disease is often traced to contaminated eggs and results in severe diarrhea, fever, vomiting, and can even cause death. The 77 outbreaks occurring in 1989 involved nearly 2,400 cases and 14 deaths.[14] Expanded efforts are needed both to reduce source exposure (e.g., sale of contaminated eggs) and to improve food preparation and handling techniques that can protect against this problem.

The principal drug safety issue of the coming years is related to polypharmacy, the use of multiple prescription and over-the-counter medications, especially by older people with chronic health problems. This problem calls for a coordinated prevention approach, involving care on the part of those who prescribe medications to ensure that they will not adversely interact with previously prescribed drug regimens still in use; attentiveness on the part of pharmacists to spot potential medication problems as their customers purchase new prescription drugs; and education for consumers to help them comply with prescribed pharmacologic therapies.

To ensure food and drug safety, by the year 2000...

12.2 Reduce salmonella infection outbreaks to fewer than 25 yearly (a 68% decrease)

Other objectives target reductions in the incidences of foodborne diseases; improving food handling techniques on the part of consumers; better pharmacy-based systems to provide alerts to customers of potential adverse drug interactions; and more regular review by primary care providers of all medications used by their older patients.

Oral Health

Although the prevalence of dental caries or cavities among children has declined steadily since the 1940s, oral diseases remain a prevalent health problem in the United States. On average, among adults 40 through 44, about 1 out of 4 tooth surfaces have been affected by decay.[66] Currently 53 percent of children aged 6 to 8 and 78 percent of 15 year olds have caries.[67] Tooth loss is a major problem among people aged 65 and older, with nearly 40 percent of those aged 65 and older having no natural teeth in 1986.[53] Periodontal diseases, especially gingivitis, also affect many adults. The total cost of dental care to the Nation was more than $27 billion in 1988.[28]

Regular care is a factor in maintaining oral health. However, nearly half the population in the United States does not obtain regular oral health care, and among low-income people the proportion not receiving care is higher.[53] The proportions of black and Hispanic adolescents with untreated decay are approximately 65 percent higher than for the total population.[57,67] One out of every four American Indian and Alaska Native adults aged 35 through 44, and nearly three out of four aged 55 and older, has fewer than 20 natural teeth.

Among preventive measures, community water fluoridation is the single most effective and efficient means of preventing dental caries in children and adults, regardless of race or income level. Yet more than one-third of people with community water systems do not have adequate fluoride, and only about half of those without fluoridated water receive fluoride from other sources.[10] Improvements are needed. Other factors that can improve oral health include regular self-care, avoiding foods that promote caries, and not using tobacco. Excessive alcohol consumption also affects oral health.

Oral cancer is also a serious problem, with 30,000 new cases and 8,600 deaths a year.[88] In fact, oral cancer deaths are more numerous than deaths from cervical cancer. Because 75 percent of oral cancers can be attributed to tobacco and alcohol use, they are preventable. Moreover, because early treatment can reduce mortality, attention is needed for its early detection.

To improve oral health, by the year 2000...

13.1 **Reduce the prevalence of dental caries to no more than 35% of children by age 8**
(a 34% decrease)

13.4 **Reduce edentulism to no more than 20 percent in people aged 65 and older**
(a 44% decrease)

Other objectives target expanding treatment of dental caries; reducing periodontal disease and tooth loss; increasing use of protective sealants on permanent teeth in children; improving parental practices that prevent baby bottle tooth decay; and improving use of oral health screening and follow-up services for all age groups.

77

Preventive Services

Maternal and Infant Health
Heart Disease and Stroke
Cancer
Diabetes and Chronic Disabling Conditions
HIV Infection
Sexually Transmitted Diseases
Immunization and Infectious Diseases
Clinical Preventive Services

Maternal and Infant Health

Of every 1,000 babies born in the United States each year, about 10 die before they reach their first birthday.[70] Although the infant mortality rate in the United States is declining and has reached an all-time low, the pace of progress has slowed. Mortality is also higher for black infants, who die at twice the rate of white infants, and data from the National Birth Cohort Study of 1983 indicate that other minorities may have higher rates than had been estimated previously. Leading causes of deaths among infants are congenital anomalies, sudden infant death syndrome (SIDS), respiratory distress syndrome, and disorders relating to short gestation.[49]

The most prominent risk factor for infant death, low birth weight (less than 2,500 grams), occurred among nearly 7 percent of all births in 1987 and was associated with more than half of all infant deaths. Black babies have twice the risk of having low birth weight. Low birth weight is also linked to a variety of nonfatal disorders, including neurodevelopmental conditions, learning and behavior problems, and lower respiratory tract infections. In 1985, approximately 11,000 low-birth-weight infants were born with moderate to severe disabilities.[55] From 1970 to 1981 low birth weight declined about 1.3 percent per year, but has since been stagnant.[70] A number of risk factors have been identified for low birth weight, including: younger and older maternal age, high parity, poor reproductive history (especially history of low birth weight), low socioeconomic status, low level of education, late entry into prenatal care, low pregnancy weight gain, smoking, and other substance abuse.[35] Smoking is estimated to be associated with from 20 to 30 percent of all low-birth-weight births in this country.[36] Illicit drug use as a contributor to low birth weight has increased in some urban areas.

An expectant mother with no prenatal care is three times more likely to have a low-birth-weight baby. Despite the importance of early prenatal care in protecting against low birth weight and infant deaths, nearly one of every four pregnant women in the United States receives no care in the first trimester of her pregnancy.[70] A disproportionate share of these mothers has low income, less than a high school education, or is very young.[86] Between 1970 and 1980 there was a significant trend toward increasing early entry into prenatal care, but that trend has since plateaued.[70] Contributing to this problem is the fact that an estimated 14 million women of reproductive age have no insurance to cover maternity care.[2]

To improve maternal and infant health, by the year 2000...

14.1 Reduce infant mortality to no more than 7 deaths per 1,000 births (a 31% decrease)

14.5 Reduce low birth weight to no more than 5% of live births (a 28% decrease)

14.11 Increase first trimester prenatal care to at least 90% of live births (an 18% increase)

Other objectives target reducing rates of fetal death, maternal mortality, and fetal alcohol syndrome; increasing abstinence from tobacco, alcohol, cocaine, and marijuana during pregnancy; increasing the proportion of mothers who gain enough weight during their pregnancies, as well as increasing the number who breastfeed their babies; reducing severe complications of pregnancy and cesarean delivery rates; increasing the availability of preconception care and counseling, as well as of genetic services and counseling; improving the management of high risk cases; and increasing the proportion of babies who receive recommended primary care services.

Heart Disease and Stroke

Despite dramatic declines in mortality from heart disease and stroke in the past two decades, about 7 million Americans are affected by coronary artery disease, and cardiovascular diseases still cause more deaths in the United States than all other diseases combined.[51] Reductions in major risk factors—high blood pressure, high blood cholesterol, and smoking—are having a significant impact on cardiovascular mortality.

Approximately 30 percent of adults in America have high blood pressure.[58] People with uncontrolled high blood pressure are at 3 to 4 times the risk of developing coronary heart disease and as much as 7 times the risk of developing a stroke as do those with normal blood pressures.[18] Overall, blacks have a higher prevalence of high blood pressure than whites (38 percent versus 29 percent).[58] Although surveys indicate that most adults with high blood pressure are aware of their condition, only about one-quarter to a third have their blood pressure under control.[57] This remains a problem despite the fact that many can reduce their blood pressure to normal through programs of physical activity and weight loss, reduced sodium and alcohol intake, and stress management; and medications are available for those who cannot.

The National Heart, Lung, and Blood Institute regards a blood cholesterol level below 200 mg/dL as desirable.[58] Yet the mean cholesterol level for Americans is 213 mg/dL,[54] and about 60 million adults in this country are estimated to have blood cholesterol levels that place them at high risk for coronary heart disease.[84] The Coronary Primary Prevention Trial showed that men at high risk were able to reduce coronary heart disease by about 2 percent for every 1 percent lower blood cholesterol level.[40] Most people can lower their high blood cholesterol by reducing their intake of saturated fat, total fat, and dietary cholesterol, and by normalizing their weight and increasing physical activity. Medications are available for those whose blood cholesterol levels remain significantly elevated despite diet modification.

Tobacco use, which may account for as much as 40 percent of heart disease deaths among people under age 65, is discussed elsewhere. Other contributors to cardiovascular disease include obesity, physical inactivity, and diabetes mellitus.

To reduce heart disease and stroke, by the year 2000...

15.1 Reduce coronary heart disease deaths to no more than 100 per 100,000 people
(a 26% decrease)

15.2 Reduce stroke deaths to no more than 20 per 100,000 people
(a 34% decrease)

15.4 Increase control of high blood pressure to at least 50% of people with HBP
(a 108% increase)

15.6 Reduce blood cholesterol to an average of no more than 200 mg/dL
(a 6% decrease)

Other objectives target appropriate management behaviors by those with high blood cholesterol and high blood pressure; reducing dietary fat intake; reducing overweight and increasing physical activity; reducing tobacco use; increasing numbers of adults who have recently been screened for high blood pressure or high blood cholesterol; better use of worksites for detection and followup programs; and improving adherence to recommended protocols and standards for primary care providers and laboratories involved in cholesterol testing and management.

Cancer

Cancer accounts for about one of every five deaths in the United States each year.[3] About 75 million Americans now living, nearly one in three, will eventually have cancer. While the incidence of cancer has increased in the past two decades, death rates for those under 55 have fallen.[47] More people are surviving cancer now than several decades ago. Not everyone, however, has benefitted equally from this trend. Blacks are less likely than whites to survive 5 years from the time of diagnosis. The five-year survival rate for all cancer sites combined is 50 percent for white patients and 37 percent for black patients.

Once surrounded by fear and fatalism, cancer has been the focus of nationwide educational campaigns to inform the public that the risk of cancer can be significantly reduced when adequate preventive measures are taken. Tobacco has been estimated to account for 30 percent of cancers, and dietary factors roughly another 35 percent.[48] For example, most cases of lung cancer, the leading cause of cancer mortality, can be prevented by not smoking, and epidemiological research suggests that diets relatively low in fat and higher in foods containing fiber may help prevent colon, rectal, breast, prostate, and other cancers. High levels of alcohol use have been linked to esophageal and oral cancers. Limiting sun exposure, use of sunscreens and protective clothing when exposed to sunlight, and avoidance of sun lamps and tanning booths can reduce the risk of skin cancer.

Early detection also can have an important impact on cancer death rates. Procedures such as mammography and clinical breast examination, the Pap test, fecal occult blood tests, proctosigmoidoscopy, and oral, skin, and digital rectal examinations make it possible to treat cancers before they spread. For example, research suggests than breast cancer deaths could be reduced by 30 percent among women aged 50 and older through the use of mammography and clinical breast examination.[85,89,93] Yet in 1987, only 25 percent of such women had these tests within the preceding 2 years. A Pap test could reduce cervical cancer deaths by an estimated 75 percent, but one out of every five women with family incomes less than $10,000 has never had a Pap test.[53] Despite the fact that fecal occult blood testing and sigmoidoscopy are important to facilitate early diagnosis of colorectal cancer, especially among those at high risk, only 27 percent of people aged 50 and older report receiving a fecal occult blood test within the preceding 2 years.

To prevent and control cancer, by the year 2000...

16.1 Reverse the rise in cancer deaths to no more than 130 per 100,000 people

16.11 Increase clinical breast exams and mammography every 2 years to at least 60% of women aged 50 and older
(a 140% increase)

16.12 Increase Pap tests every 1-3 years to at least 85% of women aged 18 and older
(a 13% increase)

16.13 Increase fecal occult blood testing every 1-2 years to at least 50% of people aged 50 and older
(an 85% increase)

Other objectives target reducing dietary fat intake; increasing consumption of vegetables, fruits, and grain products; reducing tobacco use; decreasing sun exposure; more counseling by primary care providers on diet and tobacco use and offering of screening procedures according to established protocols; and improving the quality of Pap tests and mammograms.

Diabetes and Chronic Disabling Conditions

As the population of the United States grows older, the problems posed by chronic and disabling conditions increasingly demand the Nation's attention. Chronic conditions such as heart disease, cancer, stroke, and lung and liver disease are joined in importance by other chronic and disabling conditions, affecting people in all age groups, such as diabetes, arthritis, deformities or orthopedic impairments, hearing and speech impairments, and mental retardation.

Chronic and disabling conditions have a profound effect not only on mortality rates but also on quality of life. Disability, defined by its impact on major activities one is able to perform, affected more than 9 percent of Americans in 1988.[50] About 33 million people have functional limitations that interfere with their daily activities, and more than 9 million have limitations that prevent them from working, attending school, or maintaining a household. The underlying impairments most often responsible for these conditions are arthritis, heart disease, back conditions (including spinal curvature), lower extremity impairments, and intervertebral disk disorders.[37] For those under age 18 the most frequent causes of activity limitation are asthma, mental retardation, mental illness, and hearing and speech impairments.

Diabetes is one of the most prevalent chronic conditions among Americans. Approximately 7 million people in the United States have been diagnosed with diabetes and each year some 650,000 new cases are identified. In 1987, diabetes was the underlying cause of death for more than 37,000 Americans and contributed to over 100,000 additional deaths. According to the American Diabetes Association, in addition to death, diabetes is accountable for 30 percent of kidney failure cases, is the second leading cause of blindness in people aged 45 through 74, causes half of all nontraumatic amputations, and causes a threefold increase in risk for congenital malformations and perinatal mortality among babies of diabetic mothers. Insulin-dependent diabetes mellitus (IDDM or Type I) is the most severe form, but comprises no more than 10 percent of all cases of diabetes. Noninsulin-dependent diabetes mellitus (NIDDM or Type II), while serious, has less severe consequences, usually appears after age 40, is often associated with obesity, and may often be controlled by diet and exercise, sometimes in combination with oral hypoglycemic agents. Careful control of diabetes is critical to prevention of its complications. Diet and physical activity are important to the management of both types of diabetes, and NIDDM can often be prevented through these measures.

To reduce diabetes and chronic disabling conditions, by the year 2000...

17.2 Reduce disability from chronic conditions to no more than 8% of people (a 15% decrease)

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people (an 11% decrease)

Other objectives target reducing reducing complications of diabetes; reducing disability from asthma, chronic back conditions, osteoporosis, hearing impairment, vision impairment, and mental retardation; increasing physical activity; reducing overweight; improving early diagnosis and referral for disabling conditions among the very young and older people; improving community and self-help resources for people with chronic and disabling conditions; and improving employer policies related to the needs of people with disabilities.

HIV Infection

The human immunodeficiency virus (HIV) epidemic is a multifaceted national and international problem. People with HIV infection can develop acquired immunodeficiency syndrome (AIDS), including severe opportunistic infections, Kaposi's sarcoma, and multiple-system medical complications. Without treatment about 50 percent of people develop AIDS within 10 years of becoming infected with HIV, and another 40 percent or more develop other clinical illnesses associated with HIV infection.[29] By the end of 1989, reported cases of AIDS had reached 115,000,[12] but the projected figure is expected to more than triple or quadruple by the end of 1993. It has become the seventh leading cause of potential years of life lost in the United States. By the end of 1993, a projected total of 390,000 to 480,000 cases of AIDS will have been diagnosed in the United States and 285,000 to 340,000 people will have died from the disease.[14] Annual costs of AIDS are projected to climb as high as $5 to $13 billion by 1992.[14,43]

An estimated 1 million people in the United States are infected with HIV and of these approximately 40,000 became infected in 1989. Groups at special risk have been identified and include: intravenous drug abusers and their sex partners; people with large numbers of sex partners; men who have sex with men, and their female partners; and people who exchange sex for money or drugs. Of current AIDS patients, more than three-fourths are male, and two-thirds are male homosexuals and bisexuals; but the most rapid increases are occurring among intravenous drug-abusers, women, and babies born to women in high risk groups. An estimated 20 to 35 percent of infants of infected mothers develop HIV infection. Approximately 60 percent of AIDS patients are white, 25 percent are black, and 15 percent are Hispanic.[12]

Although some therapeutic agents may extend survival, there is currently no available treatment to prevent death among people with AIDS. The survival rate in the early 1980s was only about 15 percent, before the licensure of antiviral drugs, such as zidovudine (AZT). AZT has been shown to slow replication of the virus and improve survival prospects, as have selected other agents now under study.

The development of a safe and effective HIV vaccine is a high priority for the coming decade, although the prospects for the availability of such a vaccine are uncertain. Other prevention and control strategies are vital to stopping the spread of HIV infection. Most HIV-infected people in the United States do not know they harbor the virus, and increased counseling, testing, and follow-up services are needed. Public education efforts on risks and precautions are essential to slowing the spread of the disease.

To prevent and control HIV infection, by the year 2000...

18.2 Confine HIV infection to no more than 800 per 100,000 people

Other objectives target reducing experience with sexual intercourse among adolescents; increasing use of condoms among sexually active, unmarried people; increasing outreach and access to treatment programs for intravenous drug abusers; expanding testing and counseling for people at risk of HIV infection, including improved skills among primary care providers; increasing education in schools and colleges about HIV infection and its prevention; and extension of regulations to protect workers at risk for occupational transmission of HIV.

Sexually Transmitted Diseases

Sexually transmitted diseases affect almost 12 million Americans each year, 86 percent of whom are aged 15 through 29.[11] About one-fifth of all young people, by the time they reach 21, have needed treatment for a sexually transmitted disease.[94] Because only some teenagers are sexually active, this amounts to an effective rate of at least 25 percent among those who are. The sexually transmitted diseases encompass more than 50 recognized organisms and syndromes, including, in addition to syphilis and gonorrhea, *chlamydia trachomatis* infections, genital herpes, hepatitis B, chancroid, cytomegalovirus, and human immunodeficiency virus (HIV). After AIDS, the most serious complications of sexually transmitted diseases are pelvic inflammatory disease (PID), sterility, ectopic pregnancy, blindness, cancer associated with human papillomavirus, fetal and infant death, birth defects, and mental retardation. The total societal cost of sexually transmitted diseases exceeds $3.5 billion annually, with the cost of PID and PID-associated ectopic pregnancy and infertility alone exceeding $2.6 billion.[94]

Gonorrhea is the most frequently reported communicable disease in the United States. In 1989, some 733,000 cases were reported and the incidence was an estimated 300 per 100,000 people. Youth, low-income, and minority populations are at particular risk. In 1989, adolescents aged 15 through 19 had an infection rate of 1,125 per 100,000 and blacks a rate of 1,990 per 100,000. Despite the fact that since 1981, cases of gonorrhea in males have declined 29 percent and declined 24 percent in females, the rates have not declined among racial and ethnic minorities or among teenagers. Furthermore, the percent of all gonorrhea organisms that are antibiotic-resistant grew from less than 1 percent in 1985 to 7 percent in 1989.[10]

In 1989, nearly 45,000 cases of syphilis were also reported. Syphilis is the first sexually transmitted disease for which control measures were developed and tested. Since the initiation of Federal assistance for syphilis control in the 1940s, reported cases of all stages of syphilis declined from an all-time high of 575,600 cases in 1943 to fewer than 68,000 cases in 1985. In recent years, however, the number of syphilis cases has increased dramatically, due in part to an increase in the exchange of sex for drugs, to an increased number of crack cocaine users, and to increased sexual activity among adolescents. Between 1986 and 1989, the number of reported syphilis cases increased over 55 percent, to the highest level in the United States since the early 1950s.[10]

To reduce sexually transmitted diseases, by the year 2000...

19.1 Reduce gonorrhea infections to no more than 225 per 100,000 people (a 25% decrease)

19.3 Reduce syphilis infections to no more than 10 per 100,000 people (a 45% decrease)

Other objectives target reducing infections with *chlamydia trachomatis*, genital herpes and genital warts, and hepatitis B; reducing occurrence of pelvic inflammatory disease; increasing use of condoms among sexually active, unmarried people; fuller availability of comprehensive sexually transmitted disease-related services in clinics and centers that provide family planning, maternal and child health care, drug treatment, and primary care to low income families; increasing partner tracing and notification; improving primary care provider management of STD cases; and inclusion of instruction on STD transmission and prevention as part of school health education for middle and secondary school students.

Immunization and Infectious Diseases

The reduction in incidence of infectious diseases is the most significant public health achievement of the past 100 years. This success is most notably embodied in the global eradication of smallpox, achieved in 1977. Other gains in control of infectious diseases are nearly as striking, including the virtual elimination of diphtheria and poliomyelitis in the United States. Much of the progress made has been a result of improvements in basic hygiene, food production and food handling, and water treatment. The development and use of antimicrobial drugs have reduced the morbidity and mortality associated with a number of infectious diseases. The other major factor in reducing the toll from infectious diseases has been the development and widespread use of vaccines, which are among the safest and most effective measures for the prevention of infectious diseases.

Nevertheless, infectious diseases still cause many preventable illnesses and deaths. Influenza and pneumonia, for example, shorten the lives of many older adults despite the availability of vaccines. Approximately 80 to 90 percent of all influenza-associated deaths in the United States occur in people 65 years or older.[9] The childhood vaccine-preventable diseases, although they have declined dramatically, remain problems among certain high-risk, under-immunized groups. Moreover, newly recognized diseases, such as Legionnaire's disease, toxic shock syndrome, Lyme disease, and the wide spectrum of diseases associated with human immunodeficiency virus infection, have emerged as threats to public health.

The occurrence of measles in the United States is an example of an infectious disease problem that should be readily controlled in that a vaccine has been available since 1963. Use of that vaccine helped to reduce the number of reported measles cases in this country to an all-time-low of under 1,500 in 1983. However, due to inadequate immunization of low-income preschool children, as well as of young people, the disease has demonstrated a resurgence in susceptible populations, with over 16,000 cases reported in 1989, including 41 deaths.[42] In response, the measles immunization protocol recommended by the Immunization Practices Advisory Committee now calls for a two-dose schedule of measles vaccine, but effective control will also require better outreach in low-income communities, continued strong enforcement of school entry laws, and efficient identification and intervention in disease outbreaks.

To increase immunization and prevent infectious diseases, by the year 2000...

20.1 Eliminate measles

20.2 Reduce epidemic-related pneumonia and influenza deaths to no more than 7.3 per 100,000 people aged 65 and older (a 20% decrease)

20.11 Increase childhood immunization levels to at least 90% of 2 year-olds (a 20% increase)

Other objectives target eliminating indigenous cases of diphtheria, tetanus, polio, and rubella; reducing viral hepatitis, tuberculosis, bacterial meningitis; reducing infectious diarrhea among children in licensed child care centers; reducing middle ear infections; increasing immunization levels for pneumococcal pneumonia and hepatitis B; expanding immunization laws for schools, preschools, and child care settings; eliminating financial barriers to immunizations; fully involving primary care providers in meeting the immunization needs of their patients; and expanding laboratory capabilities for rapid viral diagnosis of influenza.

Clinical Preventive Services

Clinical preventive services refer to those disease prevention and health promotion services—immunizations, screening, and counseling—delivered to individuals in a health care setting. The effectiveness of preventive services in reducing disease, disability, and premature death is now well documented. The dramatic declines observed for childhood infectious diseases and early death from strokes and cervical cancer are largely attributed to the widespread application of three preventive services: childhood immunizations, high blood pressure detection and control, and Pap tests. Several other preventive services, such as screening mammography, have also been shown to be effective. In 1989, the U.S. Preventive Services Task Force reported on its review of the scientific evidence on 169 clinical preventive services for 60 target conditions. Based on well-established criteria, it published in the *Guide to Clinical Preventive Services*[92] its recommendations on the basic services that should be provided.

Despite their proven effectiveness, clinical preventive services are rarely covered under health insurance or delivered as recommended. The few studies that have examined the receipt of clinical preventive services have found the delivery to be less than optimal. For example, although 93 percent of newborns studied had received at least one well-child examination, less than half had received three or more doses of diphtheria-pertussis-tetanus (DPT) vaccine and three or more doses of polio vaccine by age 18 months.[41] The National Health Interview Survey found an increase in the use of eight routine preventive services among adults and children between 1973 and 1982, but low-income people, people with low levels of education, and people of Hispanic origin were among the least likely to have ever received all eight procedures.[19] A related study found that only 42 percent of women had adequately received a blood pressure check, clinical breast examination, Pap test, and glaucoma screening.[96] Screening was less adequate among the poor, the less educated, and those living in rural areas, with only 33, 34, and 38 percent, respectively, screened for all four conditions.

Barriers specific to the delivery or use of preventive services include uncertainty among health care providers about which services to offer, practice organization characteristics that are not conducive to delivery of preventive services (e.g., lack of time, too few allied health professionals, and limited access to medical record systems organized for prevention), and inadequate knowledge among consumers to create the necessary demand. Another important barrier is the lack of reimbursement or financing. In addition to the fact that few insurance plans cover preventive services, a substantial proportion of Americans—some 30 to 37 million—are without any form of health insurance. And many more are underinsured or are covered by insurance programs with requirements and payments that providers are increasingly reluctant to accept.

To expand access and use of clinical preventive services, by the year 2000...

21.4 Eliminate financial barriers to clinical preventive services

Other objectives target increasing the proportion of people with a specific source of ongoing primary care; increasing primary care providers' delivery of recommended preventive services; increasing the number of people who receive recommended clinical preventive services; increasing delivery of preventive services to patients of publicly funded providers of primary care; and increasing representation of minorities among primary care providers.

Surveillance and Data Systems

Surveillance and Data Systems

Systematically collecting, analyzing, interpreting, disseminating, and using health data is essential to understanding the health status of a population and to planning effective prevention programs. Public health surveillance and data systems collect information on morbidity, mortality, disability, injuries, risk factors, services, and costs. Systems used in the United States include vital statistics and disease reporting systems as well as sample surveys, such as the continuous National Health Interview Survey (NHIS).

Although the United States Public Health Service takes the lead role in national public health data collection, it is only one partner within the larger structure necessary to collect national public health data. Surveillance often requires active cooperation among Federal, State, and local agencies. For example, the National Vital Statistics System obtains information on births, deaths, marriages, and divorces from all 50 States, New York City, the District of Columbia, Puerto Rico, the United States Virgin Islands, and Guam. Programs in each State collect vital information from many sources in local communities, including funeral directors, medical examiners, coroners, hospitals, religious authorities, and justices of the peace. Other surveys, like the National Health Interview Survey, are based on interviews with thousands of individual citizens nationwide. Still others, like the Centers for Disease Control's Behavioral Risk Factor Surveillance System, are based on State reports of telephone interviews with individual citizens.

The Institute of Medicine's report, *The Future of Public Health*, recognized the importance of surveillance and data systems for guiding public health into the 21st century, in recommending the creation and use of methods for the collection of "...national data that will permit comparison of local and State health data with those of the Nation and of other States and localities and that will facilitate progress towards the national health objectives..."[31] The development and dissemination of comparable procedures for data collection would facilitate comparability of data on health status within and among State and local areas and would permit the valid comparison of local and State health data with national data. In addition, the development of a small set of common health indicators, arrived at through a consensus process, would facilitate communication among public health officials and with others involved in programs and activities that affect the Nation's health (e.g., employers and school administrators). Though complete comparability across data systems is not possible given the differences in purposes and approaches (e.g., direct interviews v. telephone v. mail), differences can be minimized.

To improve surveillance and data systems, by the year 2000...

22.1 Develop and implement common health status indicators for use by Federal/State/local health agencies

Other objectives target creation of data sources to track the year 2000 objectives; expanded State-based activity to track the progress of the population toward the year 2000 objectives; improvement of related data for blacks, Hispanics, American Indians and Alaska Natives, Asian Americans, and people with disabilities; improvement of information transfer capabilities among Federal, State, and local agencies; and more speedy processing of survey and surveillance data.

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6. Shared Responsibilities

The challenge set out through *Healthy People 2000* is one directed to people throughout the Nation. Each of us, whether acting as an individual, an employee or employer, a member of a family, community group, professional organization, or government agency, has both an opportunity and an obligation to contribute to the effort to improve the Nation's health profile. To arrive at the established goals and objectives, we must chart a common course that depends upon commitment and action from every level of our society. Then the challenge can be met.

Personal Responsibility

The individual is both the starting point and the ultimate target of the campaign towards *Healthy People 2000*. Through the many roles that each of us fulfills in our daily lives, we are afforded numerous opportunities for promoting health and preventing disease. With these opportunities, though, comes responsibility, and the first role we must all undertake is responsibility for our own personal health habits. Improving personal health behavior can count among the most potent means to prevent disease and promote health. Measurable decreases in risks to health can result from changes in diet, exercise, tobacco use, alcohol and other drug use, injury prevention behavior, and sexual habits, but each of us must choose to make these changes a personal priority.

Our worksites can provide a smoking cessation program and a fitness center, for example, but we have to enroll. Fast food chains can offer salads, but we have to choose them. Legislators can mandate food labeling, but we must care enough to read the labels. Our health care providers can provide the necessary screening tests and immunizations, but we must take the initiative to obtain them.

While the responsibility for change lies with each of us, it also lies with all of us, and individuals cannot be expected to act alone.

The Family

The family is the primary context in which health promoting activities occur and is therefore potentially the most immediate source of health-related support and education for the individual. It is in the context of the family that attitudes and behaviors regarding diet, physical activity, hygiene, smoking, and alcohol and other drug use are often learned and maintained. Therefore, the family offers the primary opportunity for change in these areas. Parents can teach children healthy habits and offer the supportive environment necessary to sustain them. In addition, parents can ensure that their children receive needed preventive services—immunizations, screening tests, as well as counseling and education about health risks and behaviors.

Although the family plays a key role in meeting the challenge of *Healthy People 2000*, the family also should not be expected to assume these responsibilities in isolation. Families need and deserve the support of their communities in achieving and maintaining standards of good health. When families experience stresses that can result in self-destruction through abuse, neglect, and addiction, the community's responsibility becomes increasingly urgent. Single-parent homes, children in poverty, and an aging society are all factors that threaten the family's viability. As the burdens of a family increase, its very spirit is threatened and the need for community support becomes still more crucial, not only to the well-being of its members but also to its survival.

Community

In today's society, a supportive community can make a vital difference in the well-being of its members. Accordingly, there is evidence that community-based health programs can play a strong role in improving the health status of their citizens. Multiple opportunities exist for community health promotion efforts on the part of government, voluntary and self-help groups, businesses, and schools. Such local community programs are often more efficient than centralized programs managed far from the point of delivery. Furthermore, indigenous programs maintain the sensitivity to family and neighborhood values that is vital to encourage change successfully towards healthier lifestyles within the community.

Local health officials can contribute to the challenge of *Healthy People 2000* by working to ensure that health department clinics provide appropriate preventive and health promotion services for the people they serve—in addition to their historic roles of providing and monitoring traditional community health services related to public sanitation, clean water, and water fluoridation. Local governments can form partnerships with grassroots organizations, such as neighborhood associations and tenant councils, in a cooperative effort to reach specific populations on topics of special local concern.

Voluntary organizations have long worked to improve health through research, public education, and other program activities. In fact, the spirit of volunteerism is one of our strongest national traditions. Groups that have not traditionally been involved in reducing health risks should now begin to define their role in community health education. For example, local organizations serving youth can collaborate on alcohol and other drug abuse-reduction programs or on discouraging the use of tobacco. Groups representing special populations—people with disabilities, racial and ethnic minorities, older people—can work together to achieve needed changes both within their memberships and in the community at large.

Business, community leaders, and labor can work together for mutual benefit to enhance the well-being of employees and the community. Management, unions, and employee groups can sponsor wellness and employee assistance programs; coverage for effective preventive services can be sought in contract negotiations; and employees can work to make community health promotion services available at the worksite for themselves, their dependents, and retirees. Many important disease prevention and health promotion activities, such as smoking cessation, diet modification, and physical conditioning, can be accomplished at the worksite in an effective and efficient manner. Company policies can help create a healthy work and living environment and contribute to the ecology of the communities in which they are based. From enforcing safety procedures, to mandating smoke-free workplaces, to ensuring that healthful food choices are available in employee cafeterias, employers have multiple opportunities to improve the health prospects of their employees. Companies also have a responsibility to contribute to the community leadership in maintaining a healthy environment through responsible waste disposal policies.

Schools have a special role in enhancing and maintaining the health of their community's children, since roughly one-quarter of a young person's time is spent in this environment. School health education can foster healthful behaviors and help prevent hazardous ones, particularly in the areas of physical fitness, smoking, and nutrition. Standard course curricula can be modified to include health promotion, as, for example, through the addition of environmental health components to science classes. Provision of healthy meals, safe work and play areas, and physical education courses that stress the acquisition of lifetime exercise habits can be instituted as well to foster the long-term health of our youth. In partnership with parents and other community groups, schools can help to create health promotion programs and enhance health education curricula. Schools can, in addition, open their facilities and health curricula to the adults of the community, thereby serving as an even greater local resource.

Churches and other religious institutions may also offer important resources for enhancing access to health promotion and disease prevention services, especially for populations that may otherwise be difficult to reach. Churches are often strong in the same communities where the health care system is weak and overburdened. In poor black communities, for example, the church has met not only the spiritual but also the educational, physical, and social needs of its members and their families and friends. Increasingly, religious institutions are sponsoring health fairs and establishing blood pressure education, screening, and control programs. They offer individual and family counseling and are often involved in adolescent pregnancy prevention efforts. These are important contributions.

Health Professionals

Responsibility also falls to physicians and other health care providers, who are for many Americans the primary sources of health information. Their professional training gives them the skill to translate science into practice. Practice can take the form of partnerships with nonprofessionals in the pursuit of individual, family, and community health care. The effectiveness and efficiency of preventive services—screening tests, immunizations, and counseling—will be enhanced by such partnerships.

Health education and counseling, in particular, provide opportunities for interdisciplinary consulting among educators, administrators, social workers, health and other professionals in order to integrate healthy practices into the daily lives of individuals, their families, and communities. Professional associations can facilitate dissemination of the health promotion and disease prevention knowledge base through their established information exchange and professional education networks. A special opportunity and responsibility exists for the teachers of health professionals to design curricula and allocate educational resources which will equip health-related professions with prevention expertise and with the skills to share their knowledge with the public.

America's physicians, dentists, nurses, pharmacists, medical technicians and other health professionals must be not only knowledgeable in the basic and clinical sciences; they also must be life-long learners, excellent communicators, good team players, managers of scarce resources, health care visionaries, and community leaders. The day of the solo practitioner, dealing with the patient in isolation from other professionals is past.

Media

The day of the print and electronic media is, however, very much here, and these media can contribute to the exchange of health information between health professionals and the public, as well as among health professionals themselves. The average American is exposed to many different kinds of health-related messages, some explicit in news, public affairs, and documentaries, and some buried in the plots and characters seen in entertainment programs through the mass media. In partnerships with the media, voluntary and professional organizations can expand the reach of their programs while performing an important service to the community.

Partnerships can also be created between community groups and the increasing number of cable television stations, radio stations, and regional magazines that are aimed at very specific audiences and therefore have a unique opportunity to tailor their messages directly to the target audience. New opportunities will also unfold through the evolving integration of telecommunications media—telephone, television, computer—to make customized health information more accessible than ever before.

Government

Policy decisions are made regularly that can assist health professionals and the public in reaching our national health goals. These decisions range from health care legislation to legislation that bears on the environment, business, farming, production, energy, housing, information dissemination, education, and the economy. The health interests of Americans are directly and indirectly shaped by such policy decisions. Local, State, and Federal governments can ensure that health promotion and disease prevention activities receive adequate attention and support. The accomplishment of this task can be effectively bridged through partnerships with each other and with the private sector.

With the increasing decentralization of government health services, the States have taken on new roles as conveners, fostering alliances and common interests among many potential participants in disease prevention and health promotion activities. These alliances can occur both horizontally, among statewide organizations, and vertically, among community, State, and national groups. Particularly important is their role in maintaining surveillance systems on the occurrence of disease, exposure to risks, and delivery of services. They are in this respect the keepers of the tools most important to charting our progress.

The Federal Government supports basic biomedical research on disease prevention and sponsors demonstration projects to help identify effective health promotion strategies. It provides financial support for many State and local government initiatives in health promotion and disease prevention, and directly serves some of the population groups most in need. On issues of particular prominence, it sponsors the development of national educational campaigns and the formation of coalitions for action. In order to address public health issues that are in flux with changing social, behavioral, and economic environments, sustained Federal leadership is necessary to improve the health of the American people.

Healthy People: The Vision

Clearly, to meet the challenge of the *Healthy People 2000* goals and objectives, we must work both individually and collectively. Alone, no one person, family, business, organization, or government has the resources to bring about the changes needed to implement this broad program, and yet the program cannot succeed unless each of us contributes individually. In essence, *Healthy People 2000* offers hope that through cooperative efforts all Americans can live longer, healthier lives.

There are existing examples of cooperative programs which, if replicated, could propel us toward our health goals for the year 2000. Promising efforts are emerging in programs that have taken deep roots in neighborhoods across America and focus upon the early developmental needs of children. In many areas, these programs are the chief, if not the only, agents of family and community. Through these efforts, parents can both receive support and become active participants and leaders within the community. Where such programs are successful, they demonstrate that by working together—by mobilizing families, neighborhoods, schools, businesses, churches, the media, and government—we can make great strides toward helping Americans become healthier, more productive, and more fulfilled.

Thus, the final message of this report is one of shared responsibility—among the many partners in prevention. It is what we do collectively and personally that will move us as individuals and as a Nation towards a healthier future.

Appendices

Contents

A. Summary List of Objectives

B. Contributors to *Healthy People 2000*

C. Priority Area Lead Agencies

A. Summary List of Objectives

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also.

1. Physical Activity And Fitness

Health Status Objectives

1.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
1.1a	Blacks	163	115

1.2* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
1.2a	Low-income women aged 20 and older	37%	25%
1.2b	Black women aged 20 and older	44%	30%
1.2c	Hispanic women aged 20 and older		25%
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
1.2d	American Indians/Alaska Natives	29-75%[§]	30%
1.2e	People with disabilities	36%[*]	25%
1.2f	Women with high blood pressure	50%	41%
1.2g	Men with high blood pressure	39%	35%

[†] *Baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes* [*] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

Risk Reduction Objectives

1.3* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

1.4 Increase to at least 20 percent the proportion of people aged 18 and older and to at least 75 percent the proportion of children and adolescents aged 6 through 17 who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 12 percent for people aged 18 and older in 1985; 66 percent for youth aged 10 through 17 in 1984)

Special Population Target

	Vigorous Physical Activity	*1985 Baseline*	*2000 Target*
1.4a	Lower-income people aged 18 and older (annual family income <$20,000)	7%	12%

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

1.5 Reduce to no more than 15 percent the proportion of people aged 6 and older who engage in no leisure-time physical activity. (Baseline: 24 percent for people aged 18 and older in 1985)

Special Population Targets

	No Leisure-Time Physical Activity	*1985 Baseline*	*2000 Target*
1.5a	People aged 65 and older	43%	22%
1.5b	People with disabilities	35%†	20%
1.5c	Lower-income people (annual family income <$20,000)	32%†	17%

†*Baseline for people aged 18 and older*

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

1.6 Increase to at least 40 percent the proportion of people aged 6 and older who regularly perform physical activities that enhance and maintain muscular strength, muscular endurance, and flexibility. (Baseline data available in 1991)

1.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

Services and Protection Objectives

1.8 Increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education. (Baseline: 36 percent in 1984-86)

1.9 Increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities. (Baseline: Students spent an estimated 27 percent of class time being physically active in 1983)

Note: Lifetime activities are activities that may be readily carried into adulthood because they generally need only one or two people. Examples include swimming, bicycling, jogging, and racquet sports. Also counted as lifetime activities are vigorous social activities such as dancing. Competitive group sports and activities typically played only by young children such as group games are excluded.

1.10 Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs as follows:

Worksite Size	*1985 Baseline*	*2000 Target*
50-99 employees	14%	20%
100-249 employees	23%	35%
250-749 employees	32%	50%
≥750 employees	54%	80%

1.11 Increase community availability and accessibility of physical activity and fitness facilities as follows:

Facility	*1986 Baseline*	*2000 Target*
Hiking, biking, and fitness trail miles	1 per 71,000 people	1 per 10,000 people
Public swimming pools	1 per 53,000 people	1 per 25,000 people
Acres of park and recreation open space	1.8 per 1,000 people (553 people per managed acre)	4 per 1,000 people (250 people per managed acre)

1.12 Increase to at least 50 percent the proportion of primary care providers who routinely assess and counsel their patients regarding the frequency, duration, type, and intensity of each patient's physical activity practices. (Baseline: Physicians provided exercise counseling for about 30 percent of sedentary patients in 1988)

2. Nutrition

Health Status Objectives

2.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
2.1a	Blacks	163	115

2.2* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

2.3* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
2.3a	Low-income women aged 20 and older	37%	25%
2.3b	Black women aged 20 and older	44%	30%
2.3c	Hispanic women aged 20 and older		25%
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
2.3d	American Indians/Alaska Natives	29-75%[§]	30%
2.3e	People with disabilities	36%[*]	25%
2.3f	Women with high blood pressure	50%	41%
2.3g	Men with high blood pressure	39%	35%

[†] Baseline for people aged 20-74 [‡] 1982-84 baseline for Hispanics aged 20-74

[§] 1984-88 estimates for different tribes [*] 1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent. (Baseline: Up to 16 percent among low-income children in 1988, depending on age and race/ethnicity)

Special Population Targets

	Prevalence of Short Stature	*1988 Baseline*	*2000 Target*
2.4a	Low-income black children <age 1	15%	10%
2.4b	Low-income Hispanic children <age 1	13%	10%
2.4c	Low-income Hispanic children aged 1	16%	10%
2.4d	Low-income Asian/Pacific Islander children aged 1	14%	10%
2.4e	Low-income Asian/Pacific Islander children aged 2-4	16%	10%

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

Risk Reduction Objectives

2.5* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

2.6* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of vegetables and fruits and 3 servings of grain products for women aged 19 through 50 in 1985)

2.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

2.8 Increase calcium intake so at least 50 percent of youth aged 12 through 24 and 50 percent of pregnant and lactating women consume 3 or more servings daily of foods rich in calcium, and at least 50 percent of people aged 25 and older consume 2 or more servings daily. (Baseline: 7 percent of women and 14 percent of men aged 19 though 24 and 24 percent of pregnant and lactating women consumed 3 or more servings, and 15 percent of women and 23 percent of men aged 25 through 50 consumed 2 or more servings in 1985-86)

Note: The number of servings of foods rich in calcium is based on milk and milk products. A serving is considered to be 1 cup of skim milk or its equivalent in calcium (302 mg). The number of servings in this objective will generally provide approximately three-fourths of the 1989 Recommended Dietary Allowance (RDA) of calcium. The RDA is 1200 mg for people aged 12 through 24, 800 mg for people aged 25 and older, and 1200 mg for pregnant and lactating women.

2.9 Decrease salt and sodium intake so at least 65 percent of home meal preparers prepare foods without adding salt, at least 80 percent of people avoid using salt at the table, and at least 40 percent of adults regularly purchase foods modified or lower in sodium. (Baseline: 54 percent of women aged 19 through 50 who served as the main meal preparer did not use salt in food preparation, and 68 percent of women aged 19 through 50 did not use salt at the table in 1985; 20 percent of all people aged 18 and older regularly purchased foods with reduced salt and sodium content in 1988)

2.10 Reduce iron deficiency to less than 3 percent among children aged 1 through 4 and among women of childbearing age. (Baseline: 9 percent for children aged 1 through 2, 4 percent for children aged 3 through 4, and 5 percent for women aged 20 through 44 in 1976-80)

Special Population Targets

	Iron Deficiency Prevalence	*1976-80 Baseline*	*2000 Target*
2.10a	Low-income children aged 1-2	21%	10%
2.10b	Low-income children aged 3-4	10%	5%
2.10c	Low-income women of childbearing age	8%[†]	4%
	Anemia Prevalence	*1983-85 Baseline*	*2000 Target*
2.10d	Alaska Native children aged 1-5	22-28%	10%
2.10e	Black, low-income pregnant women (third trimester)	41%[‡]	20%

[†] *Baseline for women aged 20-44* [‡] *1988 baseline for women aged 15-44*

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

2.11* Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*
	During Early Postpartum Period—		
2.11a	Low-income mothers	32%	75%
2.11b	Black mothers	25%	75%
2.11c	Hispanic mothers	51%	75%
2.11d	American Indian/Alaska Native mothers	47%	75%
	At Age 5-6 Months—		
2.11a	Low-income mothers	9%	50%
2.11b	Black mothers	8%	50%
2.11c	Hispanic mothers	16%	50%
2.11d	American Indian/Alaska Native mothers	28%	50%

2.12* Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

Special Population Targets

	Appropriate Feeding Practices	*Baseline*	*2000 Target*
2.12a	Parents and caregivers with less than high school education	—	65%
2.12b	American Indian/Alaska Native parents and caregivers	—	65%

2.13 Increase to at least 85 percent the proportion of people aged 18 and older who use food labels to make nutritious food selections. (Baseline: 74 percent used labels to make food selections in 1988)

Services and Protection Objectives

2.14 Achieve useful and informative nutrition labeling for virtually all processed foods and at least 40 percent of fresh meats, poultry, fish, fruits, vegetables, baked goods, and ready-to-eat carry-away foods. (Baseline: 60 percent of sales of processed foods regulated by FDA had nutrition labeling in 1988; baseline data on fresh and carry-away foods unavailable)

2.15 Increase to at least 5,000 brand items the availability of processed food products that are reduced in fat and saturated fat. (Baseline: 2,500 items reduced in fat in 1986)

Note: A brand item is defined as a particular flavor and/or size of a specific brand and is typically the consumer unit of purchase.

2.16 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer identifiable low-fat, low-calorie food choices, consistent with the *Dietary Guidelines for Americans*. (Baseline: About 70 percent of fast food and family restaurant chains with 350 or more units had at least one low-fat, low-calorie item on their menu in 1989)

2.17 Increase to at least 90 percent the proportion of school lunch and breakfast services and child care food services with menus that are consistent with the nutrition principles in the *Dietary Guidelines for Americans*. (Baseline data available in 1993)

2.18 Increase to at least 80 percent the receipt of home food services by people aged 65 and older who have difficulty in preparing their own meals or are otherwise in need of home-delivered meals. (Baseline data available in 1991)

2.19 Increase to at least 75 percent the proportion of the Nation's schools that provide nutrition education from preschool through 12th grade, preferably as part of quality school health education. (Baseline data available in 1991)

2.20 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer nutrition education and/or weight management programs for employees. (Baseline: 17 percent offered nutrition education activities and 15 percent offered weight control activities in 1985)

2.21 Increase to at least 75 percent the proportion of primary care providers who provide nutrition assessment and counseling and/or referral to qualified nutritionists or dietitians. (Baseline: Physicians provided diet counseling for an estimated 40 to 50 percent of patients in 1988)

3. Tobacco

Health Status Objectives

3.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
3.1a	Blacks	163	115

3.2* Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

3.3 Slow the rise in deaths from chronic obstructive pulmonary disease to achieve a rate of no more than 25 per 100,000 people. (Age-adjusted baseline: 18.7 per 100,000 in 1987)

Note: Deaths from chronic obstructive pulmonary disease include deaths due to chronic bronchitis, emphysema, asthma, and other chronic obstructive pulmonary diseases and allied conditions.

Risk Reduction Objectives

3.4* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
3.4a	People with a high school education or less aged 20 and older	34%	20%
3.4b	Blue-collar workers aged 20 and older	36%	20%
3.4c	Military personnel	42%[†]	20%
3.4d	Blacks aged 20 and older	34%	18%
3.4e	Hispanics aged 20 and older	33%[‡]	18%
3.4f	American Indians/Alaska Natives	42-70%[§]	20%
3.4g	Southeast Asian men	55%[+]	20%
3.4h	Women of reproductive age	29%[††]	12%
3.4i	Pregnant women	25%[‡‡]	10%
3.4j	Women who use oral contraceptives	36%[§§]	10%

[†] 1988 baseline [‡] 1982-84 baseline for Hispanics aged 20-74 [§] 1979-87 estimates for different tribes

[+] 1984-88 baseline [††] Baseline for women aged 18-44 [‡‡] 1985 baseline [§§] 1983 baseline

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15 percent have become regular cigarette smokers by age 20. (Baseline: 30 percent of youth had become regular cigarette smokers by ages 20 through 24 in 1987)

Special Population Target

	Initiation of Smoking	*1987 Baseline*	*2000 Target*
3.5a	Lower socioeconomic status youth[†]	40%	18%

[†] *As measured by people aged 20-24 with a high school education or less*

3.6 Increase to at least 50 percent the proportion of cigarette smokers aged 18 and older who stopped smoking cigarettes for at least one day during the preceding year. (Baseline: In 1986, 34 percent of people who smoked in the preceding year stopped for at least one day during that year)

3.7 Increase smoking cessation during pregnancy so that at least 60 percent of women who are cigarette smokers at the time they become pregnant quit smoking early in pregnancy and maintain abstinence for the remainder of their pregnancy. (Baseline: 39 percent of white women aged 20 through 44 quit at any time during pregnancy in 1985)

Special Population Target

	Cessation and Abstinence During Pregnancy	*1985 Baseline*	*2000 Target*
3.7a	Women with less than a high school education	28%[†]	45%

[†] *Baseline for white women aged 20-44*

3.8 Reduce to no more than 20 percent the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home. (Baseline: More than 39 percent in 1986, as 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household)

Note: Regular exposure to tobacco smoke at home is defined as the occurrence of tobacco smoking anywhere in the home on more than 3 days each week.

3.9 Reduce smokeless tobacco use by males aged 12 through 24 to a prevalence of no more than 4 percent. (Baseline: 6.6 percent among males aged 12 through 17 in 1988; 8.9 percent among males aged 18 through 24 in 1987)

Special Population Target

	Smokeless Tobacco Use	*1986-87 Baseline*	*2000 Target*
3.9a	American Indian/Alaska Native youth	18-64%	10%

Note: For males aged 12 through 17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18 through 24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

Services and Protection Objectives

3.10 Establish tobacco-free environments and include tobacco use prevention in the curricula of all elementary, middle, and secondary schools, preferably as part of quality school health education. (Baseline: 17 percent of school districts totally banned smoking on school premises or at school functions in 1988; antismoking education was provided by 78 percent of school districts at the high school level, 81 percent at the middle school level, and 75 percent at the elementary school level in 1988)

3.11 Increase to at least 75 percent the proportion of worksites with a formal smoking policy that prohibits or severely restricts smoking at the workplace. (Baseline: 27 percent of worksites with 50 or more employees in 1985; 54 percent of medium and large companies in 1987)

3.12 Enact in 50 States comprehensive laws on clean indoor air that prohibit or strictly limit smoking in the workplace and enclosed public places (including health care facilities, schools, and public transportation). (Baseline: 42 States and the District of Columbia had laws restricting smoking in public places; 31 States restricted smoking in public workplaces; but only 13 States had comprehensive laws regulating smoking in private as well as public worksites and at least 4 public places, including restaurants, as of 1988)

3.13 Enact and enforce in 50 States laws prohibiting the sale and distribution of tobacco products to youth younger than age 19. (Baseline: 44 States and the District of Columbia had, but rarely enforced, laws regulating the sale and/or distribution of cigarettes or tobacco products to minors in 1990; only 3 set the age of majority at 19 and only 6 prohibited cigarette vending machines accessible to minors)

Note: Model legislation proposed by DHHS recommends licensure of tobacco vendors, civil money penalties and license suspension or revocation for violations, and a ban on cigarette vending machines.

3.14 Increase to 50 the number of States with plans to reduce tobacco use, especially among youth. (Baseline: 12 States in 1989)

3.15 Eliminate or severely restrict all forms of tobacco product advertising and promotion to which youth younger than age 18 are likely to be exposed. (Baseline: Radio and television advertising of tobacco products were prohibited, but other restrictions on advertising and promotion to which youth may be exposed were minimal in 1990)

3.16 Increase to at least 75 percent the proportion of primary care and oral health care providers who routinely advise cessation and provide assistance and followup for all of their tobacco-using patients. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986; about 35 percent of dentists reported counseling at least 75 percent of their smoking patients about smoking in 1986)

4. Alcohol and Other Drugs

Health Status Objectives

4.1 Reduce deaths caused by alcohol-related motor vehicle crashes to no more than 8.5 per 100,000 people. (Age-adjusted baseline: 9.8 per 100,000 in 1987)

Special Population Targets

	Alcohol-Related Motor Vehicle Crash Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
4.1a	American Indian/Alaska Native men	52.2	44.8
4.1b	People aged 15-24	21.5	18

4.2 Reduce cirrhosis deaths to no more than 6 per 100,000 people. (Age-adjusted baseline: 9.1 per 100,000 in 1987)

Special Population Targets

	Cirrhosis Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
4.2a	Black men	22	12
4.2b	American Indians/Alaska Natives	25.9	13

4.3 Reduce drug-related deaths to no more than 3 per 100,000 people. (Age-adjusted baseline: 3.8 per 100,000 in 1987)

4.4 Reduce drug abuse-related hospital emergency department visits by at least 20 percent. (Baseline data available in 1991)

Risk Reduction Objectives

4.5 Increase by at least 1 year the average age of first use of cigarettes, alcohol, and marijuana by adolescents aged 12 through 17. (Baseline: Age 11.6 for cigarettes, age 13.1 for alcohol, and age 13.4 for marijuana in 1988)

4.6 Reduce the proportion of young people who have used alcohol, marijuana, and cocaine in the past month, as follows:

Substance/Age	*1988 Baseline*	*2000 Target*
Alcohol/aged 12-17	25.2%	12.6%
Alcohol/aged 18-20	57.9%	29%
Marijuana/aged 12-17	6.4%	3.2%
Marijuana/aged 18-25	15.5%	7.8%
Cocaine/aged 12-17	1.1%	0.6%
Cocaine/aged 18-25	4.5%	2.3%

Note: The targets of this objective are consistent with the goals established by the Office of National Drug Control Policy, Executive Office of the President.

4.7 Reduce the proportion of high school seniors and college students engaging in recent occasions of heavy drinking of alcoholic beverages to no more than 28 percent of high school seniors and 32 percent of college students. (Baseline: 33 percent of high school seniors and 41.7 percent of college students in 1989)

Note: Recent heavy drinking is defined as having 5 or more drinks on one occasion in the previous 2-week period as monitored by self-reports.

4.8 Reduce alcohol consumption by people aged 14 and older to an annual average of no more than 2 gallons of ethanol per person. (Baseline: 2.54 gallons of ethanol in 1987)

4.9 Increase the proportion of high school seniors who perceive social disapproval associated with the heavy use of alcohol, occasional use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	56.4%	70%
Occasional use of marijuana	71.1%	85%
Trying cocaine once or twice	88.9%	95%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.10 Increase the proportion of high school seniors who associate risk of physical or psychological harm with the heavy use of alcohol, regular use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	44%	70%
Regular use of marijuana	77.5%	90%
Trying cocaine once or twice	54.9%	80%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.11 Reduce to no more than 3 percent the proportion of male high school seniors who use anabolic steroids. (Baseline: 4.7 percent in 1989)

Services and Protection Objectives

4.12 Establish and monitor in 50 States comprehensive plans to ensure access to alcohol and drug treatment programs for traditionally underserved people. (Baseline data available in 1991)

4.13 Provide to children in all school districts and private schools primary and secondary school educational programs on alcohol and other drugs, preferably as part of quality school health education. (Baseline: 63 percent provided some instruction, 39 percent provided counseling, and 23 percent referred students for clinical assessments in 1987)

4.14 Extend adoption of alcohol and drug policies for the work environment to at least 60 percent of worksites with 50 or more employees. (Baseline data available in 1991)

4.15 Extend to 50 States administrative driver's license suspension/revocation laws or programs of equal effectiveness for people determined to have been driving under the influence of intoxicants. (Baseline: 28 States and the District of Columbia in 1990)

4.16 Increase to 50 the number of States that have enacted and enforce policies, beyond those in existence in 1989, to reduce access to alcoholic beverages by minors.

Note: Policies to reduce access to alcoholic beverages by minors may include those that address restriction of the sale of alcoholic beverages at recreational and entertainment events at which youth make up a majority of participants/consumers, product pricing, penalties and license-revocation for sale of alcoholic beverages to minors, and other approaches designed to discourage and restrict purchase of alcoholic beverages by minors.

4.17 Increase to at least 20 the number of States that have enacted statutes to restrict promotion of alcoholic beverages that is focused principally on young audiences. (Baseline data available in 1992)

4.18 Extend to 50 States legal blood alcohol concentration tolerance levels of .04 percent for motor vehicle drivers aged 21 and older and .00 percent for those younger than age 21. (Baseline: 0 States in 1990)

4.19 Increase to at least 75 percent the proportion of primary care providers who screen for alcohol and other drug use problems and provide counseling and referral as needed. (Baseline data available in 1992)

5. Family Planning

Health Status Objectives

5.1 Reduce pregnancies among girls aged 17 and younger to no more than 50 per 1,000 adolescents. (Baseline: 71.1 pregnancies per 1,000 girls aged 15 through 17 in 1985)

Special Population Targets

	Pregnancies (per 1,000)	*1985 Baseline*	*2000 Target*
5.1a	Black adolescent girls aged 15-19	186[†]	120
5.1b	Hispanic adolescent girls aged 15-19	158	105

[†] *Non-white adolescents*

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

5.2 Reduce to no more than 30 percent the proportion of all pregnancies that are unintended. (Baseline: 56 percent of pregnancies in the previous 5 years were unintended, either unwanted or earlier than desired, in 1988)

Special Population Target

	Unintended Pregnancies	*1988 Baseline*	*2000 Target*
5.2a	Black women	78%	40%

5.3 Reduce the prevalence of infertility to no more than 6.5 percent. (Baseline: 7.9 percent of married couples with wives aged 15 through 44 in 1988)

Special Population Targets

	Prevalence of Infertility	*1988 Baseline*	*2000 Target*
5.3a	Black couples	12.1%	9%
5.3b	Hispanic couples	12.4%	9%

Note: Infertility is the failure of couples to conceive after 12 months of intercourse without contraception.

Risk Reduction Objectives

5.4* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

5.5 Increase to at least 40 percent the proportion of ever sexually active adolescents aged 17 and younger who have abstained from sexual activity for the previous 3 months. (Baseline: 26 percent of sexually active girls aged 15 through 17 in 1988)

5.6 Increase to at least 90 percent the proportion of sexually active, unmarried people aged 19 and younger who use contraception, especially combined method contraception that both effectively prevents pregnancy and provides barrier protection against disease. (Baseline: 78 percent at most recent intercourse and 63 percent at first intercourse; 2 percent used oral contraceptives and the condom at most recent intercourse; among young women aged 15 through 19 reporting in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

5.7 Increase the effectiveness with which family planning methods are used, as measured by a decrease to no more than 5 percent in the proportion of couples experiencing pregnancy despite use of a contraceptive method. (Baseline: Approximately 10 percent of women using reversible contraceptive methods experienced an unintended pregnancy in 1982)

Services and Protection Objectives

5.8 Increase to at least 85 percent the proportion of people aged 10 through 18 who have discussed human sexuality, including values surrounding sexuality, with their parents and/or have received information through another parentally endorsed source, such as youth, school or religious programs. (Baseline: 66 percent of people aged 13 through 18 have discussed sexuality with their parents; reported in 1986)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

5.9 Increase to at least 90 percent the proportion of pregnancy counselors who offer positive, accurate information about adoption to their unmarried patients with unintended pregnancies. (Baseline: 60 percent of pregnancy counselors in 1984)

Note: Pregnancy counselors are any providers of health or social services who discuss the management or outcome of pregnancy with a woman after she has received a diagnosis of pregnancy.

5.10* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

5.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

6. Mental Health and Mental Disorders

Health Status Objectives

6.1* Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*
6.1a	Youth aged 15-19	10.3	8.2
6.1b	Men aged 20-34	25.2	21.4
6.1c	White men aged 65 and older	46.1	39.2
6.1d	American Indian/Alaska Native men in Reservation States	15	12.8

6.2* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

6.3 Reduce to less than 10 percent the prevalence of mental disorders among children and adolescents. (Baseline: An estimated 12 percent among youth younger than age 18 in 1989)

6.4 Reduce the prevalence of mental disorders (exclusive of substance abuse) among adults living in the community to less than 10.7 percent. (Baseline: One-month point prevalence of 12.6 percent in 1984)

6.5 Reduce to less than 35 percent the proportion of people aged 18 and older who experienced adverse health effects from stress within the past year. (Baseline: 42.6 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*
6.5a	People with disabilities	53.5%	40%

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

Risk Reduction Objectives

6.6 Increase to at least 30 percent the proportion of people aged 18 and older with severe, persistent mental disorders who use community support programs. (Baseline: 15 percent in 1986)

6.7 Increase to at least 45 percent the proportion of people with major depressive disorders who obtain treatment. (Baseline: 31 percent in 1982)

6.8 Increase to at least 20 percent the proportion of people aged 18 and older who seek help in coping with personal and emotional problems. (Baseline: 11.1 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*
6.8a	People with disabilities	14.7%	30%

6.9 Decrease to no more than 5 percent the proportion of people aged 18 and older who report experiencing significant levels of stress who do not take steps to reduce or control their stress. (Baseline: 21 percent in 1985)

Services and Protection Objectives

6.10* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

6.11 Increase to at least 40 percent the proportion of worksites employing 50 or more people that provide programs to reduce employee stress. (Baseline: 26.6 percent in 1985)

6.12 Establish mutual help clearinghouses in at least 25 States. (Baseline: 9 States in 1989)

6.13 Increase to at least 50 percent the proportion of primary care providers who routinely review with patients their patients' cognitive, emotional, and behavioral functioning and the resources available to deal with any problems that are identified. (Baseline data available in 1992)

6.14 Increase to at least 75 percent the proportion of providers of primary care for children who include assessment of cognitive, emotional, and parent-child functioning, with appropriate counseling, referral, and followup, in their clinical practices. (Baseline data available in 1992)

7. Violent and Abusive Behavior

Health Status Objectives

7.1 Reduce homicides to no more than 7.2 per 100,000 people. (Age-adjusted baseline: 8.5 per 100,000 in 1987)

Special Population Targets

	Homicide Rate (per 100,000)	*1987 Baseline*	*2000 Target*
7.1a	Children aged 3 and younger	3.9	3.1
7.1b	Spouses aged 15-34	1.7	1.4
7.1c	Black men aged 15-34	90.5	72.4
7.1d	Hispanic men aged 15-34	53.1	42.5
7.1e	Black women aged 15-34	20.0	16.0
7.1f	American Indians/Alaska Natives in Reservation States	14.1	11.3

7.2* Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*
7.2a	Youth aged 15-19	10.3	8.2
7.2b	Men aged 20-34	25.2	21.4
7.2c	White men aged 65 and older	46.1	39.2
7.2d	American Indian/Alaska Native men in Reservation States	15	12.8

7.3 Reduce weapon-related violent deaths to no more than 12.6 per 100,000 people from major causes. (Age-adjusted baseline: 12.9 per 100,000 by firearms, 1.9 per 100,000 by knives, in 1987)

7.4 Reverse to less than 25.2 per 1,000 children the rising incidence of maltreatment of children younger than age 18. (Baseline: 25.2 per 1,000 in 1986)

Type-Specific Targets

	Incidence of Types of Maltreatment (per 1,000)	*1986 Baseline*	*2000 Target*
7.4a	Physical abuse	5.7	<5.7
7.4b	Sexual abuse	2.5	<2.5
7.4c	Emotional abuse	3.4	<3.4
7.4d	Neglect	15.9	<15.9

7.5 Reduce physical abuse directed at women by male partners to no more than 27 per 1,000 couples. (Baseline: 30 per 1,000 in 1985)

7.6 Reduce assault injuries among people aged 12 and older to no more than 10 per 1,000 people. (Baseline: 11.1 per 1,000 in 1986)

7.7 Reduce rape and attempted rape of women aged 12 and older to no more than 108 per 100,000 women. (Baseline: 120 per 100,000 in 1986)

Special Population Target

	Incidence of Rape and Attempted Rape (per 100,000)	*1986 Baseline*	*2000 Target*
7.7a	Women aged 12-34	250	225

7.8* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

Risk Reduction Objectives

7.9 Reduce by 20 percent the incidence of physical fighting among adolescents aged 14 through 17. (Baseline data available in 1991)

7.10 Reduce by 20 percent the incidence of weapon-carrying by adolescents aged 14 through 17. (Baseline data available in 1991)

7.11 Reduce by 20 percent the proportion of people who possess weapons that are inappropriately stored and therefore dangerously available. (Baseline data available in 1992)

Services and Protection Objectives

7.12 Extend protocols for routinely identifying, treating, and properly referring suicide attempters, victims of sexual assault, and victims of spouse, elder, and child abuse to at least 90 percent of hospital emergency departments. (Baseline data available in 1992)

7.13 Extend to at least 45 States implementation of unexplained child death review systems. (Baseline data available in 1991)

7.14 Increase to at least 30 the number of States in which at least 50 percent of children identified as neglected or physically or sexually abused receive physical and mental evaluation with appropriate followup as a means of breaking the intergenerational cycle of abuse. (Baseline data available in 1993)

7.15 Reduce to less than 10 percent the proportion of battered women and their children turned away from emergency housing due to lack of space. (Baseline: 40 percent in 1987)

7.16 Increase to at least 50 percent the proportion of elementary and secondary schools that teach nonviolent conflict resolution skills, preferably as a part of quality school health education. (Baseline data available in 1991)

7.17 Extend coordinated, comprehensive violence prevention programs to at least 80 percent of local jurisdictions with populations over 100,000. (Baseline data available in 1993)

7.18* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

8. Educational and Community-Based Programs

Health Status Objective

8.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
8.1a	Blacks	56	60
8.1b	Hispanics	62	65
8.1c	People aged 65 and older	12†	14†

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Risk Reduction Objective

8.2 Increase the high school graduation rate to at least 90 percent, thereby reducing risks for multiple problem behaviors and poor mental and physical health. (Baseline: 79 percent of people aged 20 through 21 had graduated from high school with a regular diploma in 1989)

Note: This objective and its target are consistent with the National Education Goal to increase high school graduation rates. The baseline estimate is a proxy. When a measure is chosen to monitor the National Education Goal, the same measure and data source will be used to track this objective.

Services and Protection Objectives

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

8.4 Increase to at least 75 percent the proportion of the Nation's elementary and secondary schools that provide planned and sequential kindergarten through 12th grade quality school health education. (Baseline data available in 1991)

8.5 Increase to at least 50 percent the proportion of postsecondary institutions with institutionwide health promotion programs for students, faculty, and staff. (Baseline: At least 20 percent of higher education institutions offered health promotion activities for students in 1989-90)

8.6 Increase to at least 85 percent the proportion of workplaces with 50 or more employees that offer health promotion activities for their employees, preferably as part of a comprehensive employee health promotion program. (Baseline: 65 percent of worksites with 50 or more employees offered at least one health promotion activity in 1985; 63 percent of medium and large companies had a wellness program in 1987)

8.7 Increase to at least 20 percent the proportion of hourly workers who participate regularly in employer-sponsored health promotion activities. (Baseline data available in 1992)

8.8 Increase to at least 90 percent the proportion of people aged 65 and older who had the opportunity to participate during the preceding year in at least one organized health promotion program through a senior center, lifecare facility, or other community-based setting that serves older adults. (Baseline data available in 1992)

8.9 Increase to at least 75 percent the proportion of people aged 10 and older who have discussed issues related to nutrition, physical activity, sexual behavior, tobacco, alcohol, other drugs, or safety with family members on at least one occasion during the preceding month. (Baseline data available in 1991)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

8.10 Establish community health promotion programs that separately or together address at least three of the Healthy People 2000 priorities and reach at least 40 percent of each State's population. (Baseline data available in 1992)

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

8.12 Increase to at least 90 percent the proportion of hospitals, health maintenance organizations, and large group practices that provide patient education programs, and to at least 90 percent the proportion of community hospitals that offer community health promotion programs addressing the priority health needs of their communities. (Baseline: 66 percent of 6,821 registered hospitals provided patient education services in 1987; 60 percent of 5,677 community hospitals offered community health promotion programs in 1987)

8.13 Increase to at least 75 percent the proportion of local television network affiliates in the top 20 television markets that have become partners with one or more community organizations around one of the health problems addressed by the Healthy People 2000 objectives. (Baseline data available in 1991)

8.14 Increase to at least 90 percent the proportion of people who are served by a local health department that is effectively carrying out the core functions of public health. (Baseline data available in 1992)

Note: The core functions of public health have been defined as assessment, policy development, and assurance. Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

9. Unintentional Injuries

Health Status Objectives

9.1 Reduce deaths caused by unintentional injuries to no more than 29.3 per 100,000 people. (Age-adjusted baseline: 34.5 per 100,000 in 1987)

Special Population Targets

	Deaths Caused By Unintential Injuries (per 100,000)	*1987 Baseline*	*2000 Target*
9.1a	American Indians/Alaska Natives	82.6	66.1
9.1b	Black males	64.9	51.9
9.1c	White males	53.6	42.9

9.2 Reduce nonfatal unintentional injuries so that hospitalizations for this condition are no more than 754 per 100,000 people. (Baseline: 887 per 100,000 in 1988)

9.3 Reduce deaths caused by motor vehicle crashes to no more than 1.9 per 100 million vehicle miles traveled and 16.8 per 100,000 people. (Baseline: 2.4 per 100 million vehicle miles traveled (VMT) and 18.8 per 100,000 people (age adjusted) in 1987)

Special Population Targets

	Deaths Caused By Motor Vehicle Crashes (per 100,000)	*1987 Baseline*	*2000 Target*
9.3a	Children aged 14 and younger	6.2	5.5
9.3b	Youth aged 15-24	36.9	33
9.3c	People aged 70 and older	22.6	20
9.3d	American Indians/Alaska Natives	46.8	39.2

Type-Specific Targets

	Deaths Caused By Motor Vehicle Crashes	*1987 Baseline*	*2000 Target*
9.3e	Motorcyclists	40.9/100 million VMT & 1.7/100,000	33/100 million VMT & 1.5/100,000
9.3f	Pedestrians	3.1/100,000	2.7/100,000

9.4 Reduce deaths from falls and fall-related injuries to no more than 2.3 per 100,000 people. (Age-adjusted baseline: 2.7 per 100,000 in 1987)

Special Population Targets

	Deaths From Falls and Fall-Related Injuries (per 100,000)	*1987 Baseline*	*2000 Target*
9.4a	People aged 65-84	18	14.4
9.4b	People aged 85 and older	131.2	105.0
9.4c	Black men aged 30-69	8	5.6

9.5 Reduce drowning deaths to no more than 1.3 per 100,000 people. (Age-adjusted baseline: 2.1 per 100,000 in 1987)

Special Population Targets

	Drowning Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
9.5a	Children aged 4 and younger	4.2	2.3
9.5b	Men aged 15-34	4.5	2.5
9.5c	Black males	6.6	3.6

9.6 Reduce residential fire deaths to no more than 1.2 per 100,000 people. (Age-adjusted baseline: 1.5 per 100,000 in 1987)

Special Population Targets

	Residential Fire Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
9.6a	Children aged 4 and younger	4.4	3.3
9.6b	People aged 65 and older	4.4	3.3
9.6c	Black males	5.7	4.3
9.6d	Black females	3.4	2.6

Type-Specific Target

		1983 Baseline	*2000 Target*
9.6e	Residential fire deaths caused by smoking	17%	5%

9.7 Reduce hip fractures among people aged 65 and older so that hospitalizations for this condition are no more than 607 per 100,000. (Baseline: 714 per 100,000 in 1988)

Special Population Target

	Hip Fractures (per 100,000)	*1988 Baseline*	*2000 Target*
9.7a	White women aged 85 and older	2,721	2,177

9.8 Reduce nonfatal poisoning to no more than 88 emergency department treatments per 100,000 people. (Baseline: 103 per 100,000 in 1986)

Special Population Target

	Nonfatal Poisoning (per 100,000)	*1986 Baseline*	*2000 Target*
9.8a	Among children aged 4 and younger	650	520

9.9 Reduce nonfatal head injuries so that hospitalizations for this condition are no more than 106 per 100,000 people. (Baseline: 125 per 100,000 in 1988)

9.10 Reduce nonfatal spinal cord injuries so that hospitalizations for this condition are no more than 5 per 100,000 people. (Baseline: 5.9 per 100,000 in 1988)

Special Population Target

	Nonfatal Spinal Cord Injuries (per 100,000)	*1988 Baseline*	*2000 Target*
9.10a	Males	8.9	7.1

9.11 Reduce the incidence of secondary disabilities associated with injuries of the head and spinal cord to no more than 16 and 2.6 per 100,000 people, respectively. (Baseline: 20 per 100,000 for serious head injuries and 3.2 per 100,000 for spinal cord injuries in 1986)

Note: Secondary disabilities are defined as those medical conditions secondary to traumatic head or spinal cord injury that impair independent and productive lifestyles.

Risk Reduction Objectives

9.12 Increase use of occupant protection systems, such as safety belts, inflatable safety restraints, and child safety seats, to at least 85 percent of motor vehicle occupants. (Baseline: 42 percent in 1988)

Special Population Target

	Use of Occupant Protection Systems	*1988 Baseline*	*2000 Target*
9.12a	Children aged 4 and younger	84%	95%

9.13 Increase use of helmets to at least 80 percent of motorcyclists and at least 50 percent of bicyclists. (Baseline: 60 percent of motorcyclists in 1988 and an estimated 8 percent of bicyclists in 1984)

Services and Protection Objectives

9.14 Extend to 50 States laws requiring safety belt and motorcycle helmet use for all ages. (Baseline: 33 States and the District of Columbia in 1989 for automobiles; 22 States, the District of Columbia, and Puerto Rico for motorcycles)

9.15 Enact in 50 States laws requiring that new handguns be designed to minimize the likelihood of discharge by children. (Baseline: 0 States in 1989)

9.16 Extend to 2,000 local jurisdictions the number whose codes address the installation of fire suppression sprinkler systems in those residences at highest risk for fires. (Baseline data available in 1991)

9.17 Increase the presence of functional smoke detectors to at least one on each habitable floor of all inhabited residential dwellings. (Baseline: 81 percent of residential dwellings in 1989)

9.18 Provide academic instruction on injury prevention and control, preferably as part of quality school health education, in at least 50 percent of public school systems (grades K through 12). (Baseline data available in 1991)

9.19* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

9.20 Increase to at least 30 the number of States that have design standards for signs, signals, markings, lighting, and other characteristics of the roadway environment to improve the visual stimuli and protect the safety of older drivers and pedestrians. (Baseline data available in 1992)

9.21 Increase to at least 50 percent the proportion of primary care providers who routinely provide age-appropriate counseling on safety precautions to prevent unintentional injury. (Baseline data available in 1992)

9.22 Extend to 50 States emergency medical services and trauma systems linking prehospital, hospital, and rehabilitation services in order to prevent trauma deaths and long-term disability. (Baseline: 2 States in 1987)

10. Occupational Safety and Health

Health Status Objectives

10.1 Reduce deaths from work-related injuries to no more than 4 per 100,000 full-time workers. (Baseline: Average of 6 per 100,000 during 1983-87)

Special Population Targets

	Work-Related Deaths (per 100,000)	*1983-87 Average*	*2000 Target*
10.1a	Mine workers	30.3	21
10.1b	Construction workers	25.0	17
10.1c	Transportation workers	15.2	10
10.1d	Farm workers	14.0	9.5

10.2 Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity to no more than 6 cases per 100 full-time workers. (Baseline: 7.7 per 100 in 1987)

Special Population Targets

	Work-Related Injuries (per 100)	*1983-87 Average*	*2000 Target*
10.2a	Construction workers	14.9	10
10.2b	Nursing and personal care workers	12.7	9
10.2c	Farm workers	12.4	8
10.2d	Transportation workers	8.3	6
10.2e	Mine workers	8.3	6

10.3 Reduce cumulative trauma disorders to an incidence of no more than 60 cases per 100,000 full-time workers. (Baseline: 100 per 100,000 in 1987)

Special Population Targets

	Cumulative Trauma Disorders (per 100,000)	*1987 Baseline*	*2000 Target*
10.3a	Manufacturing industry workers	355	150
10.3b	Meat product workers	3,920	2,000

10.4 Reduce occupational skin disorders or diseases to an incidence of no more than 55 per 100,000 full-time workers. (Baseline: Average of 64 per 100,000 during 1983-87)

10.5* Reduce hepatitis B infections among occupationally exposed workers to an incidence of no more than 1,250 cases. (Baseline: An estimated 6,200 cases in 1987)

Risk Reduction Objectives

10.6 Increase to at least 75 percent the proportion of worksites with 50 or more employees that mandate employee use of occupant protection systems, such as seatbelts, during all work-related motor vehicle travel. (Baseline data available in 1991)

10.7 Reduce to no more than 15 percent the proportion of workers exposed to average daily noise levels that exceed 85 dBA. (Baseline data available in 1992)

10.8 Eliminate exposures which result in workers having blood lead concentrations greater than 25 µg/dL of whole blood. (Baseline: 4,804 workers with blood lead levels above 25 µg/dL in 7 States in 1988)

10.9* Increase hepatitis B immunization levels to 90 percent among occupationally exposed workers. (Baseline data available in 1991)

Services and Protection Objectives

10.10 Implement occupational safety and health plans in 50 States for the identification, management, and prevention of leading work-related diseases and injuries within the State. (Baseline: 10 States in 1989)

10.11 Establish in 50 States exposure standards adequate to prevent the major occupational lung diseases to which their worker populations are exposed (byssinosis, asbestosis, coal workers' pneumoconiosis, and silicosis). (Baseline data available in 1991)

10.12 Increase to at least 70 percent the proportion of worksites with 50 or more employees that have implemented programs on worker health and safety. (Baseline data available in 1991)

10.13 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer back injury prevention and rehabilitation programs. (Baseline: 28.6 percent offered back care activities in 1985)

10.14 Establish in 50 States either public health or labor department programs that provide consultation and assistance to small businesses to implement safety and health programs for their employees. (Baseline data available in 1991)

10.15 Increase to at least 75 percent the proportion of primary care providers who routinely elicit occupational health exposures as a part of patient history and provide relevant counseling. (Baseline data available in 1992)

11. Environmental Health

Health Status Objectives

11.1 Reduce asthma morbidity, as measured by a reduction in asthma hospitalizations to no more than 160 per 100,000 people. (Baseline: 188 per 100,000 in 1987)

Special Population Targets

	Asthma Hospitalizations (per 100,000)	*1987 Baseline*	*2000 Target*
11.1a	Blacks and other nonwhites	334	265
11.1b	Children	284[†]	225

[†] *Children aged 14 and younger*

11.2* Reduce the prevalence of serious mental retardation among school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

11.3 Reduce outbreaks of waterborne disease from infectious agents and chemical poisoning to no more than 11 per year. (Baseline: Average of 31 outbreaks per year during 1981-88)

Type-Specific Target

	Average Annual Number of Waterborne Disease Outbreaks	*1981-88 Baseline*	*2000 Target*
11.3a	People served by community water systems	13	6

Note: Community water systems are public or investor-owned water systems that serve large or small communities, subdivisions, or trailer parks with at least 15 service connections or 25 year-round residents.

11.4 Reduce the prevalence of blood lead levels exceeding 15 μg/dL and 25 μg/dL among children aged 6 months through 5 years to no more than 500,000 and zero, respectively. (Baseline: An estimated 3 million children had levels exceeding 15 μg/dL, and 234,000 had levels exceeding 25 μg/dL, in 1984)

Special Population Target

	Prevalence of Blood Lead Levels Exceeding 15 μg/dL & 25 μg/dL	*1984 Baseline*	*2000 Target*
11.4a	Inner-city low-income black children (annual family income <$6,000 in 1984 dollars)	234,900 & 36,700	75,000 & 0

Risk Reduction Objectives

11.5 Reduce human exposure to criteria air pollutants, as measured by an increase to at least 85 percent in the proportion of people who live in counties that have not exceeded any Environmental Protection Agency standard for air quality in the previous 12 months. (Baseline: 49.7 percent in 1988)

Proportion Living in Counties That Have Not Exceeded Criteria Air Pollutant Standards in 1988 for:

Ozone	53.6%
Carbon monoxide	87.8%
Nitrogen dioxide	96.6%
Sulfur dioxide	99.3%
Particulates	89.4%
Lead	99.3%
Total (any of above pollutants)	49.7%

Note: An individual living in a county that exceeds an air quality standard may not actually be exposed to unhealthy air. Of all criteria air pollutants, ozone is the most likely to have fairly uniform concentrations throughout an area. Exposure is to criteria air pollutants in ambient air. Due to weather fluctuations, multi-year averages may be the most appropriate way to monitor progress toward this objective.

11.6 Increase to at least 40 percent the proportion of homes in which homeowners/occupants have tested for radon concentrations and that have either been found to pose minimal risk or have been modified to reduce risk to health. (Baseline: Less than 5 percent of homes had been tested in 1989)

Special Population Targets

	Testing and Modification As Necessary	*Baseline*	*2000 Target*
11.6a	Homes with smokers and former smokers	—	50%
11.6b	Homes with children	—	50%

11.7 Reduce human exposure to toxic agents by confining total pounds of toxic agents released into the air, water, and soil each year to no more than:

0.24 billion pounds of those toxic agents included on the Department of Health and Human Services list of carcinogens. (Baseline: 0.32 billion pounds in 1988)

2.6 billion pounds of those toxic agents included on the Agency for Toxic Substances and Disease Registry list of the most toxic chemicals. (Baseline: 2.62 billion pounds in 1988)

11.8 Reduce human exposure to solid waste-related water, air, and soil contamination, as measured by a reduction in average pounds of municipal solid waste produced per person each day to no more than 3.6 pounds. (Baseline: 4.0 pounds per person each day in 1988)

11.9 Increase to at least 85 percent the proportion of people who receive a supply of drinking water that meets the safe drinking water standards established by the Environmental Protection Agency. (Baseline: 74 percent of 58,099 community water systems serving approximately 80 percent of the population in 1988)

Note: Safe drinking water standards are measured using Maximum Contaminant Level (MCL) standards set by the Environmental Protection Agency which define acceptable levels of contaminants. See Objective 11.3 for definition of community water systems.

11.10 Reduce potential risks to human health from surface water, as measured by a decrease to no more than 15 percent in the proportion of assessed rivers, lakes, and estuaries that do not support beneficial uses, such as fishing and swimming. (Baseline: An estimated 25 percent of assessed rivers, lakes, and estuaries did not support designated beneficial uses in 1988)

Note: Designated beneficial uses, such as aquatic life support, contact recreation (swimming), and water supply, are designated by each State and approved by the Environmental Protection Agency. Support of beneficial use is a proxy measure of risk to human health, as many pollutants causing impaired water uses do not have human health effects (e.g., siltation, impaired fish habitat).

Services and Protection Objectives

11.11 Perform testing for lead-based paint in at least 50 percent of homes built before 1950. (Baseline data available in 1991)

11.12 Expand to at least 35 the number of States in which at least 75 percent of local jurisdictions have adopted construction standards and techniques that minimize elevated indoor radon levels in those new building areas locally determined to have elevated radon levels. (Baseline: 1 State in 1989)

Note: Since construction codes are frequently adopted by local jurisdictions rather than States, progress toward this objective also may be tracked using the proportion of cities and counties that have adopted such construction standards.

11.13 Increase to at least 30 the number of States requiring that prospective buyers be informed of the presence of lead-based paint and radon concentrations in all buildings offered for sale. (Baseline: 2 States required disclosure of lead-based paint in 1989; 1 State required disclosure of radon concentrations in 1989; 2 additional States required disclosure that radon has been found in the State and that testing is desirable in 1989)

11.14 Eliminate significant health risks from National Priority List hazardous waste sites, as measured by performance of clean-up at these sites sufficient to eliminate immediate and significant health threats as specified in health assessments completed at all sites. (Baseline: 1,082 sites were on the list in March of 1990; of these, health assessments have been conducted for approximately 1,000)

Note: The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 required the Environmental Protection Agency to develop criteria for determining priorities among hazardous waste sites and to develop and maintain a list of these priority sites. The resulting list is called the National Priorities List (NPL).

11.15 Establish programs for recyclable materials and household hazardous waste in at least 75 percent of counties. (Baseline: Approximately 850 programs in 41 States collected household toxic waste in 1987; extent of recycling collections unknown)

11.16 Establish and monitor in at least 35 States plans to define and track sentinel environmental diseases. (Baseline: 0 States in 1990)

Note: Sentinel environmental diseases include lead poisoning, other heavy metal poisoning (e.g., cadmium, arsenic, and mercury), pesticide poisoning, carbon monoxide poisoning, heatstroke, hypothermia, acute chemical poisoning, methemoglobinemia, and respiratory diseases triggered by environmental factors (e.g., asthma).

12. Food and Drug Safety

Health Status Objectives

12.1 Reduce infections caused by key foodborne pathogens to incidences of no more than:

Disease (per 100,000)	*1987 Baseline*	*2000 Target*
Salmonella species	18	16
Campylobacter jejuni	50	25
Escherichia coli 0157:H7	8	4
Listeria monocytogenes	0.7	0.5

12.2 Reduce outbreaks of infections due to *Salmonella enteritidis* to fewer than 25 outbreaks yearly. (Baseline: 77 outbreaks in 1989)

Risk Reduction Objective

12.3 Increase to at least 75 percent the proportion of households in which principal food preparers routinely refrain from leaving perishable food out of the refrigerator for over 2 hours and wash cutting boards and utensils with soap after contact with raw meat and poultry. (Baseline: For refrigeration of perishable foods, 70 percent; for washing cutting boards with soap, 66 percent; and for washing utensils with soap, 55 percent, in 1988)

Services and Protection Objectives

12.4 Extend to at least 70 percent the proportion of States and territories that have implemented model food codes for institutional food operations and to at least 70 percent the proportion that have adopted the new uniform food protection code ("Unicode") that sets recommended standards for regulation of all food operations. (Baseline: For institutional food operations currently using FDA's recommended model codes, 20 percent; for the new Unicode to be released in 1991, 0 percent, in 1990)

12.5 Increase to at least 75 percent the proportion of pharmacies and other dispensers of prescription medications that use linked systems to provide alerts to potential adverse drug reactions among medications dispensed by different sources to individual patients. (Baseline data available in 1993)

12.6 Increase to at least 75 percent the proportion of primary care providers who routinely review with their patients aged 65 and older all prescribed and over-the-counter medicines taken by their patients each time a new medication is prescribed. (Baseline data available in 1992)

13. Oral Health

Health Status Objectives

13.1 Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 60 percent among adolescents aged 15. (Baseline: 53 percent of children aged 6 through 8 in 1986-87; 78 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Dental Caries Prevalence	*1986-87 Baseline*	*2000 Target*
13.1a	Children aged 6-8 whose parents have less than high school education	70%	45%
13.1b	American Indian/Alaska Native children aged 6-8	92%† 52%‡	45%
13.1c	Black children aged 6-8	61%	40%
13.1d	American Indian/Alaska Native adolescents aged 15	93%‡	70%

†*In primary teeth in 1983-84* ‡*In permanent teeth in 1983-84*

13.2 Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6 through 8 and no more than 15 percent among adolescents aged 15. (Baseline: 27 percent of children aged 6 through 8 in 1986; 23 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Untreated Dental Caries:	*1986-87 Baseline*	*2000 Target*
	Among Children—		
13.2a	Children aged 6-8 whose parents have less than high school education	43%	30%
13.2b	American Indian/Alaska Native children aged 6-8	64%†	35%
13.2c	Black children aged 6-8	38%	25%
13.2d	Hispanic children aged 6-8	36%‡	25%
	Among Adolescents—		
13.2a	Adolescents aged 15 whose parents have less than a high school education	41%	25%
13.2b	American Indian/Alaska Native adolescents aged 15	84%†	40%
13.2c	Black adolescents aged 15	38%	20%
13.2d	Hispanic adolescents aged 15	31-47%‡	25%

†*1983-84 baseline* ‡*1982-84 baseline*

13.3 Increase to at least 45 percent the proportion of people aged 35 through 44 who have never lost a permanent tooth due to dental caries or periodontal diseases. (Baseline: 31 percent of employed adults had never lost a permanent tooth for any reason in 1985-86)

Note: Never lost a permanent tooth is having 28 natural teeth exclusive of third molars.

13.4 Reduce to no more than 20 percent the proportion of people aged 65 and older who have lost all of their natural teeth. (Baseline: 36 percent in 1986)

Special Population Target

	Complete Tooth Loss Prevalence	*1986 Baseline*	*2000 Target*
13.4a	Low-income people (annual family income <$15,000)	46%	25%

13.5 Reduce the prevalence of gingivitis among people aged 35 through 44 to no more than 30 percent. (Baseline: 42 percent in 1985-86)

Special Population Targets

	Gingivitis Prevalence	*1985 Baseline*	*2000 Target*
13.5a	Low-income people (annual family income <$12,500)	50%	35%
13.5b	American Indians/Alaska Natives	95%†	50%
13.5c	Hispanics		50%
	Mexican Americans	74%‡	
	Cubans	79%‡	
	Puerto Ricans	82%‡	

†*1983-84 baseline* ‡*1982-84 baseline*

13.6 Reduce destructive periodontal diseases to a prevalence of no more than 15 percent among people aged 35 through 44. (Baseline: 24 percent in 1985-86)

Note: Destructive periodontal disease is one or more sites with 4 millimeters or greater loss of tooth attachment.

13.7 Reduce deaths due to cancer of the oral cavity and pharynx to no more than 10.5 per 100,000 men aged 45 through 74 and 4.1 per 100,000 women aged 45 through 74. (Baseline: 12.1 per 100,000 men and 4.1 per 100,000 women in 1987)

Risk Reduction Objectives

13.8 Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children aged 8 and 8 percent of adolescents aged 14 in 1986-87)

Note: Progress toward this objective will be monitored based on prevalence of sealants in children at age 8 and at age 14, when the majority of first and second molars, respectively, are erupted.

13.9 Increase to at least 75 percent the proportion of people served by community water systems providing optimal levels of fluoride. (Baseline: 62 percent in 1989)

Note: Optimal levels of fluoride are determined by the mean maximum daily air temperature over a 5-year period and range between 0.7 and 1.2 parts of fluoride per one million parts of water (ppm).

13.10 Increase use of professionally or self-administered topical or systemic (dietary) fluorides to at least 85 percent of people not receiving optimally fluoridated public water. (Baseline: An estimated 50 percent in 1989)

13.11* Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

Special Population Targets

Appropriate Feeding Practices	*Baseline*	*2000 Target*
13.11a Parents and caregivers with less than high school education	—	65%
13.11b American Indian/Alaska Native parents and caregivers	—	65%

Services and Protection Objectives

13.12 Increase to at least 90 percent the proportion of all children entering school programs for the first time who have received an oral health screening, referral, and followup for necessary diagnostic, preventive, and treatment services. (Baseline: 66 percent of children aged 5 visited a dentist during the previous year in 1986)

Note: School programs include Head Start, prekindergarten, kindergarten, and 1st grade.

13.13 Extend to all long-term institutional facilities the requirement that oral examinations and services be provided no later than 90 days after entry into these facilities. (Baseline: Nursing facilities receiving Medicaid or Medicare reimbursement will be required to provide for oral examinations within 90 days of patient entry beginning in 1990; baseline data unavailable for other institutions)

Note: Long-term institutional facilities include nursing homes, prisons, juvenile homes, and detention facilities.

13.14 Increase to at least 70 percent the proportion of people aged 35 and older using the oral health care system during each year. (Baseline: 54 percent in 1986)

Special Population Targets

Proportion Using Oral Health Care System During Each Year	*1986 Baseline*	*2000 Target*
13.14a Edentulous people	11%	50%
13.14b People aged 65 and older	42%	60%

13.15 Increase to at least 40 the number of States that have an effective system for recording and referring infants with cleft lips and/or palates to craniofacial anomaly teams. (Baseline: In 1988, approximately 25 States had a central recording mechanism for cleft lip and/or palate and approximately 25 States had an organized referral system to craniofacial anomaly teams)

13.16* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

14. Maternal and Infant Health

Health Status Objectives

14.1 Reduce the infant mortality rate to no more than 7 per 1,000 live births. (Baseline: 10.1 per 1,000 live births in 1987)

Special Population Targets

	Infant Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1a	Blacks	17.9	11
14.1b	American Indians/Alaska Natives	12.5[†]	8.5
14.1c	Puerto Ricans	12.9[†]	8

Type-Specific Targets

	Neonatal and Postneonatal Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1d	Neonatal mortality	6.5	4.5
14.1e	Neonatal mortality among blacks	11.7	7
14.1f	Neonatal mortality among Puerto Ricans	8.6[†]	5.2
14.1g	Postneonatal mortality	3.6	2.5
14.1h	Postneonatal mortality among blacks	6.1	4
14.1i	Postneonatal mortality among American Indians/Alaska Natives	6.5[†]	4
14.1j	Postneonatal mortality among Puerto Ricans	4.3[†]	2.8

[†] *1984 baseline*

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

14.2 Reduce the fetal death rate (20 or more weeks of gestation) to no more than 5 per 1,000 live births plus fetal deaths. (Baseline: 7.6 per 1,000 live births plus fetal deaths in 1987)

Special Population Target

	Fetal Deaths	*1987 Baseline*	*2000 Target*
14.2a	Blacks	12.8[†]	7.5[†]

[†] *Per 1,000 live births plus fetal deaths*

14.3 Reduce the maternal mortality rate to no more than 3.3 per 100,000 live births. (Baseline: 6.6 per 100,000 in 1987)

Special Population Target

	Maternal Mortality	*1987 Baseline*	*2000 Target*
14.3a	Blacks	14.2[†]	5[†]

[†] *Per 100,000 live births*

Note: The objective uses the maternal mortality rate as defined by the National Center for Health Statistics. However, if other sources of maternal mortality data are used, a 50-percent reduction in maternal mortality is the intended target.

14.4 Reduce the incidence of fetal alcohol syndrome to no more than 0.12 per 1,000 live births. (Baseline: 0.22 per 1,000 live births in 1987)

Special Population Targets

	Fetal Alcohol Syndrome (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.4a	American Indians/Alaska Natives	4	2
14.4b	Blacks	0.8	0.4

Risk Reduction Objectives

14.5 Reduce low birth weight to an incidence of no more than 5 percent of live births and very low birth weight to no more than 1 percent of live births. (Baseline: 6.9 and 1.2 percent, respectively, in 1987)

Special Population Target

		1987 Baseline	*2000 Target*
	Low Birth Weight		
14.5a	Blacks	12.7%	9%
	Very Low Birth Weight		
	Blacks	2.7%	2%

Note: Low birth weight is weight at birth of less than 2,500 grams; very low birth weight is weight at birth of less than 1,500 grams.

14.6 Increase to at least 85 percent the proportion of mothers who achieve the minimum recommended weight gain during their pregnancies. (Baseline: 67 percent of married women in 1980)

Note: Recommended weight gain is pregnancy weight gain recommended in the 1990 National Academy of Science's report, Nutrition During Pregnancy.

14.7 Reduce severe complications of pregnancy to no more than 15 per 100 deliveries. (Baseline: 22 hospitalizations (prior to delivery) per 100 deliveries in 1987)

Note: Severe complications of pregnancy will be measured using hospitalizations due to pregnancy-related complications.

14.8 Reduce the cesarean delivery rate to no more than 15 per 100 deliveries. (Baseline: 24.4 per 100 deliveries in 1987)

Type-Specific Targets

	Cesarean Delivery (per 100 deliveries)	*1987 Baseline*	*2000 Target*
14.8a	Primary (first time) cesarean delivery	17.4	12
14.8b	Repeat cesarean deliveries	91.2†	65†

† *Among women who had a previous cesarean delivery*

14.9* Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*
	During Early Postpartum Period —		
14.9a	Low-income mothers	32%	75%
14.9b	Black mothers	25%	75%
14.9c	Hispanic mothers	51%	75%
14.9d	American Indian/Alaska Native mothers	47%	75%
	At Age 5-6 Months —		
14.9a	Low-income mothers	9%	50%
14.9b	Black mothers	8%	50%
14.9c	Hispanic mothers	16%	50%
14.9d	American Indian/Alaska Native mothers	28%	50%

14.10 Increase abstinence from tobacco use by pregnant women to at least 90 percent and increase abstinence from alcohol, cocaine, and marijuana by pregnant women by at least 20 percent. (Baseline: 75 percent of pregnant women abstained from tobacco use in 1985)

Note: Data for alcohol, cocaine, and marijuana use by pregnant women will be available from the National Maternal and Infant Health Survey, CDC, in 1991.

Services and Protection Objectives

14.11 Increase to at least 90 percent the proportion of all pregnant women who receive prenatal care in the first trimester of pregnancy. (Baseline: 76 percent of live births in 1987)

Special Population Targets

	Proportion of Pregnant Women Receiving Early Prenatal Care	*1987 Baseline*	*2000 Target*
14.11a	Black women	61.1†	90†
14.11b	American Indian/Alaska Native women	60.2†	90†
14.11c	Hispanic women	61.0†	90†

† *Percent of live births*

14.12* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

14.13 Increase to at least 90 percent the proportion of women enrolled in prenatal care who are offered screening and counseling on prenatal detection of fetal abnormalities. (Baseline data available in 1991)

Note: This objective will be measured by tracking use of maternal serum alpha-fetoprotein screening tests.

14.14 Increase to at least 90 percent the proportion of pregnant women and infants who receive risk-appropriate care. (Baseline data available in 1991)

Note: This objective will be measured by tracking the proportion of very low birth weight infants (less than 1,500 grams) born in facilities covered by a neonatologist 24 hours a day.

14.15 Increase to at least 95 percent the proportion of newborns screened by State-sponsored programs for genetic disorders and other disabling conditions and to 90 percent the proportion of newborns testing positive for disease who receive appropriate treatment. (Baseline: For sickle cell anemia, with 20 States reporting, approximately 33 percent of live births screened (57 percent of black infants); for galactosemia, with 38 States reporting, approximately 70 percent of live births screened)

Note: As measured by the proportion of infants served by programs for sickle cell anemia and galactosemia. Screening programs should be appropriate for State demographic characteristics.

14.16 Increase to at least 90 percent the proportion of babies aged 18 months and younger who receive recommended primary care services at the appropriate intervals. (Baseline data available in 1992)

15. Heart Disease and Stroke

Health Status Objectives

15.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
15.1a	Blacks	163	115

15.2 Reduce stroke deaths to no more than 20 per 100,000 people. (Age-adjusted baseline: 30.3 per 100,000 in 1987)

Special Population Target

	Stroke Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
15.2a	Blacks	51.2	27

15.3 Reverse the increase in end-stage renal disease (requiring maintenance dialysis or transplantation) to attain an incidence of no more than 13 per 100,000. (Baseline: 13.9 per 100,000 in 1987)

Special Population Target

	ESRD Incidence (per 100,000)	*1987 Baseline*	*2000 Target*
15.3a	Blacks	32.4	30

Risk Reduction Objectives

15.4 Increase to at least 50 percent the proportion of people with high blood pressure whose blood pressure is under control. (Baseline: 11 percent controlled among people aged 18 through 74 in 1976-80; an estimated 24 percent for people aged 18 and older in 1982-84)

Special Population Target

	High Blood Pressure Control	*1976-80 Baseline*	*1982-84 Baseline*	*2000 Target*
15.4a	Men with high blood pressure	6%	16%	40%

Note: People with high blood pressure have blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or take antihypertensive medication. Blood pressure control is defined as maintaining a blood pressure less than 140 mm Hg systolic and 90 mm Hg diastolic. In NHANES II and the Seven States Study, control of hypertension did not include nonpharmacologic treatment. In NHANES III, those controlling their high blood pressure without medication (e.g., through weight loss, low sodium diets, or restriction of alcohol) will be included.

15.5 Increase to at least 90 percent the proportion of people with high blood pressure who are taking action to help control their blood pressure. (Baseline: 79 percent of aware hypertensives aged 18 and older were taking action to control their blood pressure in 1985)

Special Population Targets

	Taking Action to Control Blood Pressure	*1985 Baseline*	*2000 Target*
15.5a	White hypertensive men aged 18-34	51%[†]	80%
15.5b	Black hypertensive men aged 18-34	63%[†]	80%

[†] *Baseline for aware hypertensive men*

Note: High blood pressure is defined as blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or taking antihypertensive medication. Actions to control blood pressure include taking medication, dieting to lose weight, cutting down on salt, and exercising.

15.6 Reduce the mean serum cholesterol level among adults to no more than 200 mg/dL. (Baseline: 213 mg/dL among people aged 20 through 74 in 1976-80, 211 mg/dL for men and 215 mg/dL for women)

15.7 Reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater to no more than 20 percent among adults. (Baseline: 27 percent for people aged 20 through 74 in 1976-80, 29 percent for women and 25 percent for men)

15.8 Increase to at least 60 percent the proportion of adults with high blood cholesterol who are aware of their condition and are taking action to reduce their blood cholesterol to recommended levels. (Baseline: 11 percent of all people aged 18 and older, and thus an estimated 30 percent of people with high blood cholesterol, were aware that their blood cholesterol level was high in 1988)

Note: "High blood cholesterol" means a level that requires diet and, if necessary, drug treatment. Actions to control high blood cholesterol include keeping medical appointments, making recommended dietary changes (e.g., reducing saturated fat, total fat, and dietary cholesterol), and, if necessary, taking prescribed medication.

15.9* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

15.10* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
15.10a Low-income women aged 20 and older	37%	25%
15.10b Black women aged 20 and older	44%	30%
15.10c Hispanic women aged 20 and older		25%
Mexican-American women	39%[‡]	
Cuban women	34%[‡]	
Puerto Rican women	37%[‡]	
15.10d American Indians/Alaska Natives	29-75%[§]	30%
15.10e People with disabilities	36%[*]	25%
15.10f Women with high blood pressure	50%	41%
15.10g Men with high blood pressure	39%	35%

[†] Baseline for people aged 20-74 [‡] 1982-84 baseline for Hispanics aged 20-74

[§] 1984-88 estimates for different tribes

[*] 1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

15.11* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

15.12* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
15.12a People with a high school education or less aged 20 and older	34%	20%
15.12b Blue-collar workers aged 20 and older	36%	20%
15.12c Military personnel	42%[†]	20%
15.12d Blacks aged 20 and older	34%	18%
15.12e Hispanics aged 20 and older	33%[‡]	18%
15.12f American Indians/Alaska Natives	42-70%[§]	20%
15.12g Southeast Asian men	55%[*]	20%
15.12h Women of reproductive age	29%[††]	12%
15.12i Pregnant women	25%[‡‡]	10%
15.12j Women who use oral contraceptives	36%[§§]	10%

[†] 1988 baseline [‡] 1982-84 baseline for Hispanics aged 20-74 [§] 1979-87 estimates for different tribes

[*] 1984-88 baseline [††] Baseline for women aged 18-44 [‡‡] 1985 baseline [§§] 1983 baseline

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

Services and Protection Objectives

15.13 Increase to at least 90 percent the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high. (Baseline: 61 percent of people aged 18 and older had their blood pressure measured within the preceding 2 years and were given the systolic and diastolic values in 1985)

Note: A blood pressure measurement within the preceding 2 years refers to a measurement by a health professional or other trained observer.

15.14 Increase to at least 75 percent the proportion of adults who have had their blood cholesterol checked within the preceding 5 years. (Baseline: 59 percent of people aged 18 and older had "ever" had their cholesterol checked in 1988; 52 percent were checked "within the preceding 2 years" in 1988)

15.15 Increase to at least 75 percent the proportion of primary care providers who initiate diet and, if necessary, drug therapy at levels of blood cholesterol consistent with current management guidelines for patients with high blood cholesterol. (Baseline data available in 1991)

Note: Current treatment recommendations are outlined in detail in the Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, released by the National Cholesterol Education Program in 1987. Guidelines appropriate for children are currently being established. Treatment recommendations are likely to be refined over time. Thus, for the year 2000, "current" means whatever recommendations are then in effect.

15.16 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer high blood pressure and/or cholesterol education and control activities to their employees. (Baseline: 16.5 percent offered high blood pressure activities and 16.8 percent offered nutrition education activities in 1985)

15.17 Increase to at least 90 percent the proportion of clinical laboratories that meet the recommended accuracy standard for cholesterol measurement. (Baseline: 53 percent in 1985)

16. Cancer

Health Status Objectives

16.1* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

16.2* Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

16.3 Reduce breast cancer deaths to no more than 20.6 per 100,000 women. (Age-adjusted baseline: 22.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 27.2 and 25.2 per 100,000, respectively.

16.4 Reduce deaths from cancer of the uterine cervix to no more than 1.3 per 100,000 women. (Age-adjusted baseline: 2.8 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 3.2 and 1.5 per 100,000, respectively.

16.5 Reduce colorectal cancer deaths to no more than 13.2 per 100,000 people. (Age-adjusted baseline: 14.4 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 20.1 and 18.7 per 100,000, respectively.

Risk Reduction Objectives

16.6* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
16.6a	People with a high school education or less aged 20 and older	34%	20%
16.6b	Blue-collar workers aged 20 and older	36%	20%
16.6c	Military personnel	42%[†]	20%
16.6d	Blacks aged 20 and older	34%	18%
16.6e	Hispanics aged 20 and older	33%[‡]	18%
16.6f	American Indians/Alaska Natives	42-70%[§]	20%
16.6g	Southeast Asian men	55%[*]	20%
16.6h	Women of reproductive age	29%[††]	12%
16.6i	Pregnant women	25%[‡‡]	10%
16.6j	Women who use oral contraceptives	36%[§§]	10%

[†] *1988 baseline* [‡] *1982-84 baseline for Hispanics aged 20-74* [§] *1979-87 estimates for different tribes*

[*] *1984-88 baseline* [††] *Baseline for women aged 18-44* [‡‡] *1985 baseline* [§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

16.7* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

Note: The inclusion of a saturated fat target in this objective should not be interpreted as evidence that reducing only saturated fat will reduce cancer risk. Epidemiologic and experimental animal studies suggest that the amount of fat consumed rather than the specific type of fat can influence the risk of some cancers.

16.8* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of fruits and vegetables and 3 servings of grain products for women aged 19 through 50 in 1985)

16.9 Increase to at least 60 percent the proportion of people of all ages who limit sun exposure, use sunscreens and protective clothing when exposed to sunlight, and avoid artificial sources of ultraviolet light (e.g., sun lamps, tanning booths). (Baseline data available in 1992)

Services and Protection Objectives

16.10 Increase to at least 75 percent the proportion of primary care providers who routinely counsel patients about tobacco use cessation, diet modification, and cancer screening recommendations. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986)

16.11 Increase to at least 80 percent the proportion of women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 36 percent of women aged 40 and older "ever" in 1987; 25 percent of women aged 50 and older "within the preceding 2 years" in 1987)

Special Population Targets

Clinical Breast Exam & Mammogram:	*1987 Baseline*	*2000 Target*
Ever Received—		
16.11a Hispanic women aged 40 and older	20%	80%
16.11b Low-income women aged 40 and older (annual family income <$10,000)	22%	80%
16.11c Women aged 40 and older with less than high school education	23%	80%
16.11d Women aged 70 and older	25%	80%
16.11e Black women aged 40 and older	28%	80%
Received Within Preceding 2 Years—		
16.11a Hispanic women aged 50 and older	18%	60%
16.11b Low-income women aged 50 and older (annual family income <$10,000)	15%	60%
16.11c Women aged 50 and older with less than high school education	16%	60%
16.11d Women aged 70 and older	18%	60%
16.11e Black women aged 50 and older	19%	60%

16.12 Increase to at least 95 percent the proportion of women aged 18 and older with uterine cervix who have ever received a Pap test, and to at least 85 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 88 percent "ever" and 75 percent "within the preceding 3 years" in 1987)

Special Population Targets

Pap Test:	*1987 Baseline*	*2000 Target*
Ever Received—		
16.12a Hispanic women aged 18 and older	75%	95%
16.12b Women aged 70 and older	76%	95%
16.12c Women aged 18 and older with less than high school education	79%	95%
16.12d Low-income women aged 18 and older (annual family income <$10,000)	80%	95%
Received Within Preceding 3 Years—		
16.12a Hispanic women aged 18 and older	66%	80%
16.12b Women aged 70 and older	44%	70%
16.12c Women aged 18 and older with less than high school education	58%	75%
16.12d Low-income women aged 18 and older (annual family income <$10,000)	64%	80%

16.13 Increase to at least 50 percent the proportion of people aged 50 and older who have received fecal occult blood testing within the preceding 1 to 2 years, and to at least 40 percent those who have ever received proctosigmoidoscopy. (Baseline: 27 percent received fecal occult blood testing during the preceding 2 years in 1987; 25 percent had ever received proctosigmoidoscopy in 1987)

16.14 Increase to at least 40 percent the proportion of people aged 50 and older visiting a primary care provider in the preceding year who have received oral, skin, and digital rectal examinations during one such visit. (Baseline: An estimated 27 percent received a digital rectal exam during a physician visit within the preceding year in 1987)

16.15 Ensure that Pap tests meet quality standards by monitoring and certifying all cytology laboratories. (Baseline data available in 1991)

16.16 Ensure that mammograms meet quality standards by monitoring and certifying at least 80 percent of mammography facilities. (Baseline: An estimated 18 to 21 percent certified by the American College of Radiology as of June 1990)

17. Diabetes and Chronic Disabling Conditions

Health Status Objectives

Chronic Disabling Conditions

17.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
17.1a	Blacks	56	60
17.1b	Hispanics	62	65
17.1c	People aged 65 and older	12†	14†

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

17.2 Reduce to no more than 8 percent the proportion of people who experience a limitation in major activity due to chronic conditions. (Baseline: 9.4 percent in 1988)

Special Population Targets

	Prevalence of Disability	*1988 Baseline*	*2000 Target*
17.2a	Low-income people (annual family income <$10,000 in 1988)	18.9%	15%
17.2b	American Indians/Alaska Natives	13.4%†	11%
17.2c	Blacks	11.2%	9%

†*1983-85 baseline*

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

17.3 Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities, thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

Special Population Target

	Difficulty Performing Self-Care Activities (per 1,000)	*1984-85 Baseline*	*2000 Target*
17.3a	People aged 85 and older	371	325

Note: Personal care activities are bathing, dressing, using the toilet, getting in and out of bed or chair, and eating.

17.4 Reduce to no more than 10 percent the proportion of people with asthma who experience activity limitation. (Baseline: Average of 19.4 percent during 1986-88)

Note: Activity limitation refers to any self-reported limitation in activity attributed to asthma.

17.5 Reduce activity limitation due to chronic back conditions to a prevalence of no more than 19 per 1,000 people. (Baseline: Average of 21.9 per 1,000 during 1986-88)

Note: Chronic back conditions include intervertebral disk disorders, curvature of the back or spine, and other self-reported chronic back impairments such as permanent stiffness or deformity of the back or repeated trouble with the back. Activity limitation refers to any self-reported limitation in activity attributed to a chronic back condition.

17.6 Reduce significant hearing impairment to a prevalence of no more than 82 per 1,000 people. (Baseline: Average of 88.9 per 1,000 during 1986-88)

Special Population Target

	Hearing Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*
17.6a	People aged 45 and older	203	180

Note: Hearing impairment covers the range of hearing deficits from mild loss in one ear to profound loss in both ears. Generally, inability to hear sounds at levels softer (less intense) than 20 decibels (dB) constitutes abnormal hearing. Significant hearing impairment is defined as having hearing thresholds for speech poorer than 25 dB. However, for this objective, self-reported hearing impairment (i.e., deafness in one or both ears or any trouble hearing in one or both ears) will be used as a proxy measure for significant hearing impairment.

17.7 Reduce significant visual impairment to a prevalence of no more than 30 per 1,000 people. (Baseline: Average of 34.5 per 1,000 during 1986-88)

Special Population Target

	Visual Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*
17.7a	People aged 65 and older	87.7	70

Note: Significant visual impairment is generally defined as a permanent reduction in visual acuity and/or field of vision which is not correctable with eyeglasses or contact lenses. Severe visual impairment is defined as inability to read ordinary newsprint even with corrective lenses. For this objective, self-reported blindness in one or both eyes and other self-reported visual impairments (i.e., any trouble seeing with one or both eyes even when wearing glasses or colorblindness) will be used as a proxy measure for significant visual impairment.

17.8* Reduce the prevalence of serious mental retardation in school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

Note: Serious mental retardation is defined as an Intelligence Quotient (I.Q.) less than 50. This includes individuals defined by the American Association of Mental Retardation as profoundly retarded (I.Q. of 20 or less), severely retarded (I.Q. of 21-35), and moderately retarded (I.Q. of 36-50).

Diabetes

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people. (Age-adjusted baseline: 38 per 100,000 in 1986)

Special Population Targets

	Diabetes-Related Deaths (per 100,000)	*1986 Baseline*	*2000 Target*
17.9a	Blacks	65	58
17.9b	American Indians/Alaska Natives	54	48

Note: Diabetes-related deaths refer to deaths from diabetes as an underlying or contributing cause.

17.10 Reduce the most severe complications of diabetes as follows:

Complications Among People With Diabetes	*1988 Baseline*	*2000 Target*
End-stage renal disease	1.5/1,000†	1.4/1,000
Blindness	2.2/1,000	1.4/1,000
Lower extremity amputation	8.2/1,000†	4.9/1,000
Perinatal mortality‡	5%	2%
Major congenital malformations‡	8%	4%

†1987 baseline ‡Among infants of women with established diabetes

Special Population Targets for ESRD

	ESRD Due to Diabetes (per 1,000)	*1983-86 Baseline*	*2000 Target*
17.10a	Blacks with diabetes	2.2	2
17.10b	American Indians/Alaska Natives with diabetes	2.1	1.9

Special Population Target for Amputations

	Lower Extremity Amputations Due to Diabetes (per 1,000)	*1984-87 Baseline*	*2000 Target*
17.10c	Blacks with diabetes	10.2	6.1

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

17.11 Reduce diabetes to an incidence of no more than 2.5 per 1,000 people and a prevalence of no more than 25 per 1,000 people. (Baselines: 2.9 per 1,000 in 1987; 28 per 1,000 in 1987)

Special Population Targets

	Prevalence of Diabetes (per 1,000)	*1982-84 Baseline†*	*2000 Target*
17.11a	American Indians/Alaska Natives	69‡	62
17.11b	Puerto Ricans	55	49
17.11c	Mexican Americans	54	49
17.11d	Cuban Americans	36	32
17.11e	Blacks	36§	32

†1982-84 baseline for people aged 20-74

‡1987 baseline for American Indians/Alaska Natives aged 15 and older

§1987 baseline for blacks of all ages

Risk Reduction Objectives

17.12* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
17.12a Low-income women aged 20 and older	37%	25%
17.12b Black women aged 20 and older	44%	30%
17.12c Hispanic women aged 20 and older		25%
Mexican-American women	39%[‡]	
Cuban women	34%[‡]	
Puerto Rican women	37%[‡]	
17.12d American Indians/Alaska Natives	29-75%[§]	30%
17.12e People with disabilities	36%[+]	25%
17.12f Women with high blood pressure	50%	41%
17.12g Men with high blood pressure	39%	35%

[†] *1976-80 baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

17.13* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

Services and Protection Objectives

17.14 Increase to at least 40 percent the proportion of people with chronic and disabling conditions who receive formal patient education including information about community and self-help resources as an integral part of the management of their condition. (Baseline data available in 1991)

Type-Specific Targets

Patient Education	*1983-84 Baseline*	*2000 Target*
17.14a People with diabetes	32% (classes) 68% (counseling)	75%
17.14b People with asthma	—	50%

17.15 Increase to at least 80 percent the proportion of providers of primary care for children who routinely refer or screen infants and children for impairments of vision, hearing, speech and language, and assess other developmental milestones as part of well-child care. (Baseline data available in 1992)

17.16 Reduce the average age at which children with significant hearing impairment are identified to no more than 12 months. (Baseline: Estimated as 24 to 30 months in 1988)

17.17 Increase to at least 60 percent the proportion of providers of primary care for older adults who routinely evaluate people aged 65 and older for urinary incontinence and impairments of vision, hearing, cognition, and functional status. (Baseline data available in 1992)

17.18 Increase to at least 90 percent the proportion of perimenopausal women who have been counseled about the benefits and risks of estrogen replacement therapy (combined with progestin, when appropriate) for prevention of osteoporosis. (Baseline data available in 1991)

17.19 Increase to at least 75 percent the proportion of worksites with 50 or more employees that have a voluntarily established policy or program for the hiring of people with disabilities. (Baseline: 37 percent of medium and large companies in 1986)

Note: Voluntarily established policies and programs for the hiring of people with disabilities are encouraged for worksites of all sizes. This objective is limited to worksites with 50 or more employees for tracking purposes.

17.20 Increase to 50 the number of States that have service systems for children with or at risk of chronic and disabling conditions, as required by Public Law 101-239. (Baseline data available in 1991)

Note: Children with or at risk of chronic and disabling conditions, often referred to as children with special health care needs, include children with psychosocial as well as physical problems. This population encompasses children with a wide variety of actual or potential disabling conditions, including children with or at risk for cerebral palsy, mental retardation, sensory deprivation, developmental disabilities, spina bifida, hemophilia, other genetic disorders, and health-related educational and behavioral problems. Service systems for such children are organized networks of comprehensive, community-based, coordinated, and family-centered services.

18. HIV Infection

Health Status Objectives

18.1 Confine annual incidence of diagnosed AIDS cases to no more than 98,000 cases. (Baseline: An estimated 44,000 to 50,000 diagnosed cases in 1989)

Special Population Targets

	Diagnosed AIDS Cases	*1989 Baseline*	*2000 Target*
18.1a	Gay and bisexual men	26,000-28,000	48,000
18.1b	Blacks	14,000-15,000	37,000
18.1c	Hispanics	7,000-8,000	18,000

Note: Targets for this objective are equal to upper bound estimates of the incidence of diagnosed AIDS cases projected for 1993.

18.2 Confine the prevalence of HIV infection to no more than 800 per 100,000 people. (Baseline: An estimated 400 per 100,000 in 1989)

Special Population Targets

	Estimated Prevalence of HIV Infection (per 100,000)	*1989 Baseline*	*2000 Target*
18.2a	Homosexual men	2,000-42,000[†]	20,000
18.2b	Intravenous drug abusers	30,000-40,000[‡]	40,000
18.2c	Women giving birth to live-born infants	150	100

[†] *Per 100,000 homosexual men aged 15 through 24 based on men tested in selected sexually transmitted disease clinics in unlinked surveys; most studies find HIV prevalence of between 2,000 and 21,000 per 100,000*

[‡] *Per 100,000 intravenous drug abusers aged 15 through 24 in the New York city vicinity; in areas other than major metropolitan centers, infection rates in people entering selected drug treatment programs tested in unlinked surveys are often under 500 per 100,000*

Risk Reduction Objectives

18.3* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

18.4* Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)

Special Population Targets

	Use of Condoms	*1988 Baseline*	*2000 Target*
18.4a	Sexually active young women aged 15-19 (by their partners)	26%	60%
18.4b	Sexually active young men aged 15-19	57%	75%
18.4c	Intravenous drug abusers	—	60%

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

18.5 Increase to at least 50 percent the estimated proportion of all intravenous drug abusers who are in drug abuse treatment programs. (Baseline: An estimated 11 percent of opiate abusers were in treatment in 1989)

18.6 Increase to at least 50 percent the estimated proportion of intravenous drug abusers not in treatment who use only uncontaminated drug paraphernalia ("works"). (Baseline: 25 to 35 percent of opiate abusers in 1989)

18.7 Reduce to no more than 1 per 250,000 units of blood and blood components the risk of transfusion-transmitted HIV infection. (Baseline: 1 per 40,000 to 150,000 units in 1989)

Services and Protection Objectives

18.8 Increase to at least 80 percent the proportion of HIV-infected people who have been tested for HIV infection. (Baseline: An estimated 15 percent of approximately 1,000,000 HIV-infected people had been tested at publicly funded clinics, in 1989)

18.9* Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)

Special Population Target

	Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
18.9a	Providers practicing in high incidence areas	—	90%

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

18.10 Increase to at least 95 percent the proportion of schools that have age-appropriate HIV education curricula for students in 4th through 12th grade, preferably as part of quality school health education. (Baseline: 66 percent of school districts required HIV education but only 5 percent required HIV education in each year for 7th through 12th grade in 1989)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

18.11 Provide HIV education for students and staff in at least 90 percent of colleges and universities. (Baseline data available in 1995)

18.12 Increase to at least 90 percent the proportion of cities with populations over 100,000 that have outreach programs to contact drug abusers (particularly intravenous drug abusers) to deliver HIV risk reduction messages. (Baseline data available in 1995)

Note: HIV risk reduction messages include messages about reducing or eliminating drug use, entering drug treatment, disinfection of injection equipment if still injecting drugs, and safer sex practices.

18.13* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

18.14 Extend to all facilities where workers are at risk for occupational transmission of HIV regulations to protect workers from exposure to bloodborne infections, including HIV infection. (Baseline data available in 1992)

Note: The Occupational Safety and Health Administration (OSHA) is expected to issue regulations requiring worker protection from exposure to bloodborne infections, including HIV, during 1991. Implementation of the OSHA regulations would satisfy this objective.

19. Sexually Transmitted Diseases

Health Status Objectives

19.1 Reduce gonorrhea to an incidence of no more than 225 cases per 100,000 people. (Baseline: 300 per 100,000 in 1989)

Special Population Targets

	Gonorrhea Incidence (per 100,000)	*1989 Baseline*	*2000 Target*
19.1a	Blacks	1,990	1,300
19.1b	Adolescents aged 15-19	1,123	750
19.1c	Women aged 15-44	501	290

19.2 Reduce *Chlamydia trachomatis* infections, as measured by a decrease in the incidence of nongonococcal urethritis to no more than 170 cases per 100,000 people. (Baseline: 215 per 100,000 in 1988)

19.3 Reduce primary and secondary syphilis to an incidence of no more than 10 cases per 100,000 people. (Baseline: 18.1 per 100,000 in 1989)

Special Population Target

	Primary and Secondary Syphilis Incidence (per 100,000)	*1989 Baseline*	*2000 Target*
19.3a	Blacks	118	65

19.4 Reduce congenital syphilis to an incidence of no more than 50 cases per 100,000 live births. (Baseline: 100 per 100,000 live births in 1989)

19.5 Reduce genital herpes and genital warts, as measured by a reduction to 142,000 and 385,000, respectively, in the annual number of first-time consultations with a physician for the conditions. (Baseline: 167,000 and 451,000 in 1988)

19.6 Reduce the incidence of pelvic inflammatory disease, as measured by a reduction in hospitalizations for pelvic inflammatory disease to no more than 250 per 100,000 women aged 15 through 44. (Baseline: 311 per 100,000 in 1988)

19.7* Reduce sexually transmitted hepatitis B infection to no more than 30,500 cases. (Baseline: 58,300 cases in 1988)

19.8 Reduce the rate of repeat gonorrhea infection to no more than 15 percent within the previous year. (Baseline: 20 percent in 1988)

Note: As measured by a reduction in the proportion of gonorrhea patients who, within the previous year, were treated for a separate case of gonorrhea.

Risk Reduction Objectives

19.9* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

19.10* Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)

Special Population Targets

Use of Condoms	*1988 Baseline*	*2000 Target*
19.10a Sexually active young women aged 15-19 (by their partners)	25%	60%
19.10b Sexually active young men aged 15-19	57%	75%
19.10c Intravenous drug abusers	—	60%

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Services and Protection Objectives

19.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

19.12 Include instruction in sexually transmitted disease transmission prevention in the curricula of all middle and secondary schools, preferably as part of quality school health education. (Baseline: 95 percent of schools reported offering at least one class on sexually transmitted diseases as part of their standard curricula in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

19.13 Increase to at least 90 percent the proportion of primary care providers treating patients with sexually transmitted diseases who correctly manage cases, as measured by their use of appropriate types and amounts of therapy. (Baseline: 70 percent in 1988)

19.14* Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)

Special Population Target

Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
19.14a Providers practicing in high incidence areas	—	90%

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

19.15 Increase to at least 50 percent the proportion of all patients with bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia) who are offered provider referral services. (Baseline: 20 percent of those treated in sexually transmitted disease clinics in 1988)

Note: Provider referral (previously called contact tracing) is the process whereby health department personnel directly notify the sexual partners of infected individuals of their exposure to an infected individual.

20. Immunization and Infectious Diseases

Health Status Objectives

20.1 Reduce indigenous cases of vaccine-preventable diseases as follows:

Disease	*1988 Baseline*	*2000 Target*
Diphtheria among people aged 25 and younger	1	0
Tetanus among people aged 25 and younger	3	0
Polio (wild-type virus)	0	0
Measles	3,058	0
Rubella	225	0
Congenital Rubella Syndrome	6	0
Mumps	4,866	500
Pertussis	3,450	1,000

20.2 Reduce epidemic-related pneumonia and influenza deaths among people aged 65 and older to no more than 7.3 per 100,000. (Baseline: Average of 9.1 per 100,000 during 1980 through 1987)

Note: Epidemic-related pneumonia and influenza deaths are those that occur above and beyond the normal yearly fluctuations of mortality. Because of the extreme variability in epidemic-related deaths from year to year, the target is a 3-year average.

20.3* Reduce viral hepatitis as follows:

(Per 100,000)	*1987 Baseline*	*2000 Target*
Hepatitis B (HBV)	63.5	40
Hepatitis A	31	23
Hepatitis C	18.3	13.7

Special Population Targets for HBV

	HBV Cases	*1987 Estimated Baseline*	*2000 Target*
20.3a	Intravenous drug abusers	30,000	22,500
20.3b	Heterosexually active people	33,000	22,000
20.3c	Homosexual men	25,300	8,500
20.3d	Children of Asians/Pacific Islanders	8,900	1,800
20.3e	Occupationally exposed workers	6,200	1,250
20.3f	Infants	3,500	550 new carriers
20.3g	Alaska Natives	15	1

20.4 Reduce tuberculosis to an incidence of no more than 3.5 cases per 100,000 people. (Baseline: 9.1 per 100,000 in 1988)

Special Population Targets

	Tuberculosis Cases (per 100,000)	*1988 Baseline*	*2000 Target*
20.4a	Asians/Pacific Islanders	36.3	15
20.4b	Blacks	28.3	10
20.4c	Hispanics	18.3	5
20.4d	American Indians/Alaska Natives	18.1	5

20.5 Reduce by at least 10 percent the incidence of surgical wound infections and nosocomial infections in intensive care patients. (Baseline data available in late 1990)

20.6 Reduce selected illness among international travelers as follows:

Incidence	*1987 Baseline*	*2000 Target*
Typhoid fever	280	140
Hepatitis A	1,280	640
Malaria	2,000	1,000

20.7 Reduce bacterial meningitis to no more than 4.7 cases per 100,000 people. (Baseline: 6.3 per 100,000 in 1986)

Special Population Target

	Bacterial Meningitis Cases (per 100,000)	*1987 Baseline*	*2000 Target*
20.7a	Alaska Natives	33	8

20.8 Reduce infectious diarrhea by at least 25 percent among children in licensed child care centers and children in programs that provide an Individualized Education Program (IEP) or Individualized Health Plan (IHP). (Baseline data available in 1992)

20.9 Reduce acute middle ear infections among children aged 4 and younger, as measured by days of restricted activity or school absenteeism, to no more than 105 days per 100 children. (Baseline: 131 days per 100 children in 1987)

20.10 Reduce pneumonia-related days of restricted activity as follows:

	1987 Baseline	*2000 Target*
People aged 65 and older (per 100 people)	48 days	38 days
Children aged 4 and younger (per 100 children)	27 days	24 days

Risk Reduction Objectives

20.11 Increase immunization levels as follows:

Basic immunization series among children under age 2: at least 90 percent. (Baseline: 70-80 percent estimated in 1989)

Basic immunization series among children in licensed child care facilities and kindergarten through post-secondary education institutions: at least 95 percent. (Baseline: For licensed child care, 94 percent; 97 percent for children entering school for the 1987-1988 school year; and for post-secondary institutions, baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among institutionalized chronically ill or older people: at least 80 percent. (Baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among noninstitutionalized, high-risk populations, as defined by the Immunization Practices Advisory Committee: at least 60 percent. (Baseline: 10 percent estimated for pneumococcal vaccine and 20 percent for influenza vaccine in 1985)

Hepatitis B immunization among high-risk populations, including infants of surface antigen-positive mothers to at least 90 percent; occupationally exposed workers to at least 90 percent; IV-drug users in drug treatment programs to at least 50 percent; and homosexual men to at least 50 percent. (Baseline data available in 1992)

20.12 Reduce postexposure rabies treatments to no more than 9,000 per year. (Baseline: 18,000 estimated treatments in 1987)

Services and Protection Objectives

20.13 Expand immunization laws for schools, preschools, and day care settings to all States for all antigens. (Baseline: 9 States and the District of Columbia in 1990)

20.14 Increase to at least 90 percent the proportion of primary care providers who provide information and counseling about immunizations and offer immunizations as appropriate for their patients. (Baseline data available in 1992)

20.15 Improve the financing and delivery of immunizations for children and adults so that virtually no American has a financial barrier to receiving recommended immunizations. (Baseline: Financial coverage for immunizations was included in 45 percent of employment-based insurance plans with conventional insurance plans; 62 percent with Preferred Provider Organization plans; and 98 percent with Health Maintenance Organization plans in 1989; Medicaid covered basic immunizations for eligible children and Medicare covered pneumococcal immunization for eligible older adults in 1990)

20.16 Increase to at least 90 percent the proportion of public health departments that provide adult immunization for influenza, pneumococcal disease, hepatitis B, tetanus, and diphtheria. (Baseline data available in 1991)

20.17 Increase to at least 90 percent the proportion of local health departments that have ongoing programs for actively identifying cases of tuberculosis and latent infection in populations at high risk for tuberculosis. (Baseline data available in 1991)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

20.18 Increase to at least 85 percent the proportion of people found to have tuberculosis infection who completed courses of preventive therapy. (Baseline: 89 health departments reported that 66.3 percent of 95,201 persons placed on preventive therapy completed their treatment in 1987)

20.19 Increase to at least 85 percent the proportion of tertiary care hospital laboratories and to at least 50 percent the proportion of secondary care hospital and health maintenance organization laboratories possessing technologies for rapid viral diagnosis of influenza. (Baseline data available in 1992)

21. Clinical Preventive Services

Health Status Objective

21.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

		Special Population Targets	
	Years of Healthy Life	*1980 Baseline*	*2000 Target*
21.1a	Blacks	56	60
21.1b	Hispanics	62	65
21.1c	People aged 65 and older	12†	14†

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Risk Reduction Objective

21.2 Increase to at least 50 percent the proportion of people who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

		Special Population Targets	
	Receipt of Recommended Services	*Baseline*	*2000 Target*
21.2a	Infants up to 24 months	—	90%
21.2b	Children aged 2-12	—	80%
21.2c	Adolescents aged 13-18	—	50%
21.2d	Adults aged 19-39	—	40%
21.2e	Adults aged 40-64	—	40%
21.2f	Adults aged 65 and older	—	40%
21.2g	Low-income people	—	50%
21.2h	Blacks	—	50%
21.2i	Hispanics	—	50%
21.2j	Asians/Pacific Islanders	—	50%
21.2k	American Indians/Alaska Natives	—	70%
21.2l	People with disabilities	—	80%

Services and Protection Objectives

21.3 Increase to at least 95 percent the proportion of people who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: Less than 82 percent in 1986, as 18 percent reported having no physician, clinic, or hospital as a regular source of care)

Special Population Targets

	Percentage With Source of Care	*1986 Baseline*	*2000 Target*
21.3a	Hispanics	70%	95%
21.3b	Blacks	80%	95%
21.3c	Low-income people	80%	95%

21.4 Improve financing and delivery of clinical preventive services so that virtually no American has a financial barrier to receiving, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

21.5 Assure that at least 90 percent of people for whom primary care services are provided directly by publicly funded programs are offered, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

Note: Publicly funded programs that provide primary care services directly include federally funded programs such as the Maternal and Child Health Program, Community and Migrant Health Centers, and the Indian Health Service as well as primary care service settings funded by State and local governments. This objective does not include services covered indirectly through the Medicare and Medicaid programs.

21.6 Increase to at least 50 percent the proportion of primary care providers who provide their patients with the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

21.7 Increase to at least 90 percent the proportion of people who are served by a local health department that assesses and assures access to essential clinical preventive services. (Baseline data available in 1992)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

Degrees Awarded To:	*1985-86 Baseline*	*2000 Target*
Blacks	5%	8%
Hispanics	3%	6.4%
American Indians/Alaska Natives	0.3%	0.6%

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

22. Surveillance and Data Systems

Objectives

22.1 Develop a set of health status indicators appropriate for Federal, State, and local health agencies and establish use of the set in at least 40 States. (Baseline: No such set exists in 1990)

22.2 Identify, and create where necessary, national data sources to measure progress toward each of the year 2000 national health objectives. (Baseline: 77 percent of the objectives have baseline data in 1990)

Type-Specific Target

		1989 Baseline	*2000 Target*
22.2a	State level data for at least two-thirds of the objectives	23 States[†]	35 States

[†] *Measured using the 1989 Draft Year 2000 National Health Objectives*

22.3 Develop and disseminate among Federal, State, and local agencies procedures for collecting comparable data for each of the year 2000 national health objectives and incorporate these into Public Health Service data collection systems. (Baseline: Although such surveys as the National Health Interview Survey may serve as a model, widely accepted procedures do not exist in 1990)

22.4 Develop and implement a national process to identify significant gaps in the Nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

22.5 Implement in all States periodic analysis and publication of data needed to measure progress toward objectives for at least 10 of the priority areas of the national health objectives. (Baseline: 20 States reported that they disseminate the analyses they use to assess State progress toward the health objectives to the public and to health professionals in 1989)

Type-Specific Target

	1989 Baseline	*2000 Target*
22.5a Periodic analysis and publication of State progress toward the national objectives for each racial or ethnic group that makes up at least 10 percent of the State population	—	25 States

Note: Periodic is at least once every 3 years. Objectives include, at a minimum, one from each objectives category: health status, risk reduction, and services and protection.

22.6 Expand in all States systems for the transfer of health information related to the national health objectives among Federal, State, and local agencies. (Baseline: 30 States reported that they have some capability for transfer of health data, tables, graphs, and maps to Federal, State, and local agencies that collect and analyze data in 1989)

Note: Information related to the national health objectives includes State and national level baseline data, disease prevention/health promotion evaluation results, and data generated to measure progress.

22.7 Achieve timely release of national surveillance and survey data needed by health professionals and agencies to measure progress toward the national health objectives. (Baseline data available in 1993)

Note: Timely release (publication of provisional or final data or public use data tapes) should be based on the use of the data, but is at least within one year of the end of data collection.

Age-Related Objectives

*Reduce the death rate for children by 15 percent to no more than 28 per 100,000 children aged 1 through 14, and for infants by approximately 30 percent to no more than 7 per 1,000 live births. (Baseline: 33 per 100,000 for children in 1987 and 10.1 per 1,000 live births for infants in 1987)

Reduce the death rate for adolescents and young adults by 15 percent to no more than 85 per 100,000 people aged 15 through 24. (Baseline: 99.4 per 100,000 in 1987)

Reduce the death rate for adults by 20 percent to no more than 340 per 100,000 people aged 25 through 64. (Baseline: 423 per 100,000 in 1987)

*Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities (a reduction of about 19 percent), thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

B. Contributors to *Healthy People 2000*

Healthy People 2000: National Health Promotion and Disease Prevention Objectives is the product of a national effort that has involved professionals and citizens, private organizations and public agencies from every part of the Nation. Work on the report began in 1987 with the formation of the Healthy People 2000 Consortium and the convening of public hearings across the country. Testimony from the public hearings became the primary resource material for working groups of professionals to use in crafting the health objectives themselves. After extensive public review and comment, involving more than 10,000 people, the objectives were refined and revised to produce the report.

Preparation of the report was sponsored by the U.S. Public Health Service, through a project coordinated by the Deputy Assistant Secretary for Health (Disease Prevention and Health Promotion). Project management was facilitated by the work of the PHS Steering Committee on the Healthy People 2000 Objectives; the Committee on Health Objectives for the Year 2000, Institute of Medicine, National Academy of Sciences; and the Secretary's Council on Health Promotion and Disease Prevention. Principal staff and editorial responsibility for the project was carried out by James A. Harrell, Lynn M. Artz, Ashley Files, and David Baker. Other staff from the Office of Disease Prevention and Health Promotion helping in the coordination and development of the overall project included Barbara Anderson, John Bailar, Amber Barnato, Sandra Buesking, Mary Jo Deering, Christopher DeGraw, Olga Emgushov, Martha G. Frazier, Toni M. Goodwin, Linda M. Harris, Douglas B. Kamerow, Thomas Kim, Loretta M. Logan, Patricia Lynch, Caroline McNeil, Linda D. Meyers, Diane Rittenhouse, Marilyn K. Schulenberg, Sara L. White, Jennifer Woods, Christina Wypijewski, Michael Yao, and Daniel Yarano.

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Healthy People 2000 Consortium

National Organizations

Academy of General Dentistry
Aerobics and Fitness Association of America
Alcohol and Drug Problems Association of North America
Alliance for Aging Research
Alliance for Health
Amateur Athletic Union of the United States
American Academy of Child and Adolescent Psychiatry
American Academy of Family Physicians
American Academy of Ophthalmology
American Academy of Orthopaedic Surgeons
American Academy of Pediatric Dentistry
American Academy of Pediatrics

American Alliance for Health, Physical Education, Recreation, and Dance
American Art Therapy Association
American Association for Clinical Chemistry
American Association for Dental Research
American Association for Marriage and Family Therapy
American Association for Respiratory Care
American Association for the Advancement of Science
American Association of Certified Orthoptists
American Association of Colleges of Osteopathic Medicine
American Association of Colleges of Pharmacy
American Association of Dental Schools
American Association of Homes for the Aging
American Association of Occupational Health Nurses
American Association of Pathologists' Assistants
American Association of Public Health Dentistry
American Association of Public Health Physicians
American Association of Retired Persons
American Association of School Administrators
American Association of Suicidology
American Association of University Affiliated Programs for Persons with Developmental Disabilities
American Association on Mental Retardation
American Cancer Society
American College Health Association
American College of Cardiology
American College of Clinical Pharmacy
American College of Health Care Administrators
American College of Healthcare Executives
American College of Nurse-Midwives
American College of Nutrition
American College of Obstetricians and Gynecologists
American College of Occupational Medicine
American College of Physicians
American College of Preventive Medicine
American College of Radiology
American College of Sports Medicine
American Council on Alcoholism
American Dental Association
American Dental Hygienists' Association
American Diabetes Association
American Dietetic Association
American Federation of Teachers
American Geriatrics Society
American Heart Association
American Home Economics Association
American Hospital Association
American Indian Health Care Association
American Institute for Preventive Medicine
American Institute of Nutrition
American Kinesiotherapy Association
American Lung Association
American Meat Institute
American Medical Association
American Medical Student Association
American Nurses' Association
American Nutritionists Association
American Occupational Therapy Association
American Optometric Association
American Orthopaedic Society for Sports Medicine
American Osteopathic Academy of Sports Medicine
American Osteopathic Association
American Osteopathic Hospital Association
American Pharmaceutical Association
American Physical Therapy Association
American Physiological Society
American Podiatric Medical Association
American Psychiatric Association
American Psychiatric Nurses Association
American Psychological Association
American Public Health Association
American Red Cross
American Rehabilitation Counseling Association
American School Food Service Association
American School Health Association
American Social Health Association
American Society for Clinical Nutrition
American Society for Microbiology
American Society for Parenteral and Enteral Nutrition
American Society for Psycoprophylaxis in Obstetrics
American Society of Acupuncture
American Society of Addiction Medicine
American Society of Allied Health Professions
American Society of Hospital Pharmacists
American Society of Human Genetics
American Society of Ocularists
American Speech-Language-Hearing Association
American Spinal Injury Association
American Statistical Association
American Thoracic Society
Arthritis Foundation
Asian American Health Forum
Association for Applied Psychophysiology and Biofeedback
Association for Fitness in Business
Association for Hospital Medical Education
Association for Practitioners in Infection Control
Association for Retarded Citizens of the United States
Association for the Advancement of Automotive Medicine
Association for the Advancement of Health Education
Association for Vital Records and Health Statistics
Association of Academic Health Centers
Association of American Indian Physicians
Association of American Medical Colleges
Association of Clinical Scientists

Association of Community Health Nursing Educators
Association of Food and Drug Officials
Association of Maternal and Child Health Programs
Association of Pediatric Oncology Nurses
Association of Rehabilitation Nurses
Association of Schools of Public Health
Association of State and Territorial Dental Directors
Association of State and Territorial Directors of Nursing
Association of State and Territorial Directors of Public Health Education
Association of State and Territorial Health Officials
Association of State and Territorial Public Health Laboratory Directors
Association of State and Territorial Public Health Nutrition Directors
Association of State and Territorial Public Health Social Work
Association of Teachers of Preventive Medicine
Association of Technical Personnel in Ophthalmology
Black Congress on Health, Law, and Economics
Blue Cross and Blue Shield Association
Boys Scouts of America
Business Roundtable
Camp Fire
Cardiovascular Credentialing International/National Board of Cardiovascular Technology
Catholic Health Association of the United States
Children's Hospital National Medical Center
College of American Pathologists
Council for Responsible Nutrition
Council of Medical Specialty Societies
Dairy and Food Nutrition Council of the Southeast
Emergency Nurses Association
Eye Bank Association of America
Federation of American Societies for Experimental Biology
Federation of Nurses and Health Professionals
Food Marketing Institute
Future Homemakers of America
Gerontological Society of America
Girl Scouts of the United States of America
Great Lakes Association of Clinical Medicine
Grocery Manufacturers of America
Group Health Association of America
Health Industry Manufacturers Association
Health Insurance Association of America
Highway Users Federation for Safety and Mobility
Institute of Food Technologists
International Association for Enterostomal Therapy
International Lactation Consultant Association
International Life Sciences Institute
International Patient Education Council
La Leche League International
Learning Disabilities Association of America
March of Dimes Birth Defects Foundation
Maternal and Child Health Network
Maternity Center Association
Midwives' Alliance of North America
Migrant Clinicians Network
Mothers Against Drunk Driving
NAACOG—The Organization of Obstetric, Gynecologic, and Neonatal Nurses
NARD—formerly National Association of Retail Druggists
National AIDS Network
National Alliance for the Mentally Ill
National Alliance of Black School Educators
National Alliance of Nurse Practitioners
National Association for Hispanic Elderly
National Association for Home Care
National Association for Human Development
National Association for Music Therapy
National Association for Sport and Physical Education
National Association of Biology Teachers
National Association of Childbearing Centers
National Association of Community Health Centers
National Association of Counties
National Association of County Health Officials
National Association of Elementary School Principals
National Association of Governors Councils on Physical Fitness and Sports
National Association of Neonatal Nurses
National Association of Optometrists and Opticians
National Association of Pediatric Nurse Associates and Practitioners
National Association of RSVP Directors
National Association of School Nurses
National Association of Secondary School Principals
National Association of Social Workers
National Association of State Alcohol and Drug Abuse Directors
National Association of State Boards of Education
National Association of State NET Program Coordinators
National Association of State School Nursing Consultants
National Black Nurses Association
National Board of Medical Examiners
National Center for Health Education
National Coalition of Hispanic Health and Human Services Organization
National Commission Against Drunk Driving
National Committee for Adoption
National Committee for Prevention of Child Abuse
National Conference of State Legislatures
National Consumers League
National Council for International Health
National Council for the Education of Health Professionals in Health Promotion
National Council on Alcoholism and Drug Dependence

National Council on Disability
National Council on Health Laboratory Services
National Council on Patient Information and Education
National Council on Self-Help and Public Health
National Council on the Aging
National Dairy Council
National Environmental Health Association
National Extension Homemakers Council
National Family Planning and Reproductive Health Association
National Federation of State High School Associations
National Food Processors Association
National Head Injury Foundation
National Health Council
National Health Lawyers Association
National Hearing Aid Society
National Institute for Fitness and Sport
National Kidney Foundation
National League for Nursing
National Lesbian and Gay Health Foundation
National Medical Association
National Mental Health Association
National Museum of Health and Medicine
National Nurses Society on Addictions
National Organization for Women
National Organization on Adolescent Pregnancy and Parenting
National Osteoporosis Foundation
National Pest Control Association
National Pressure Ulcer Advisory Panel
National PTA
National Recreation and Park Association
National Safety Council
National School Boards Association
National Society of Allied Health
National Society to Prevent Blindness
National Strength and Conditioning Association
National Stroke Association
National Wellness Institute
National Women's Health Network
NEA Health Information Network
Nursing Network on Violence Against Women
Oncology Nursing Society
Paralyzed Veterans of America
People's Medical Society
Pharmaceutical Manufacturers Association
Planned Parenthood Federation of America
Population Association of America
Produce Marketing Association
Salt Institute
Salvation Army
Society for Nutrition Education
Society for Public Health Education
Society of Behavioral Medicine
Society of Hospital Epidemiologists of America
Society of Prospective Medicine
Society of State Directors of Health, Physical Education, and Recreation
South Cove Community Health Center
State Family Planning Administrators
United States Chamber of Commerce
United States Conference of Mayors
United Way of America
Visiting Nurse Associations of America
Voluntary Hospitals of America
Washington Business Group on Health
Wellness Councils of America—WELCOA
Western Consortium for Public Health
Women's Sports Foundation

State and Territorial Health Departments

Alabama
Alaska
American Samoa
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Guam
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Puerto Rico
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

C. Priority Area Lead Agencies

1.	Physical Activity and Fitness	President's Council on Physical Fitness and Sports
2.	Nutrition	National Institutes of Health Food and Drug Administration
3.	Tobacco	Centers for Disease Control
4.	Alcohol and Other Drugs	Alcohol, Drug Abuse, and Mental Health Administration
5.	Family Planning	Office of Population Affairs
6.	Mental Health and Mental Disorders	Alcohol, Drug Abuse, and Mental Health Administration
7.	Violent and Abusive Behavior	Centers for Disease Control
8.	Educational and Community-Based Programs	Centers for Disease Control Health Resources and Services Administration
9.	Unintentional Injuries	Centers for Disease Control
10.	Occupational Safety and Health	Centers for Disease Control
11.	Environmental Health	National Institutes of Health Centers for Disease Control
12.	Food and Drug Safety	Food and Drug Administration
13.	Oral Health	National Institutes of Health Centers for Disease Control
14.	Maternal and Infant Health	Health Resources and Services Administration
15.	Heart Disease and Stroke	National Institutes of Health
16.	Cancer	National Institutes of Health
17.	Diabetes and Chronic Disabling Conditions	National Institutes of Health Centers for Disease Control
18.	HIV Infection	National AIDS Program Office
19.	Sexually Transmitted Diseases	Centers for Disease Control
20.	Immunization and Infectious Diseases	Centers for Disease Control
21.	Clinical Preventive Services	Health Resources and Services Administration Centers for Disease Control
22.	Surveillance and Data Systems	Centers for Disease Control

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HEALTHY PEOPLE 2000

National Health Promotion and Disease Prevention Objectives

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HEALTHY PEOPLE 2000

National Health Promotion and Disease Prevention Objectives

Full Report, With Commentary

U.S. Department of Health and Human Services
Public Health Service

Healthy People 2000 *is a statement of national opportunities. Although the Federal Government facilitated its development, it is not intended as a statement of Federal standards or requirements. It is the product of a national effort, involving 22 expert working groups, a consortium that has grown to include almost 300 national organizations and all the State health departments, and the Institute of Medicine of the National Academy of Sciences, which helped the U.S. Public Health Service to manage the consortium, convene regional and national hearings, and receive testimony from more than 750 individuals and organizations. After extensive public review and comment, involving more than 10,000 people, the objectives were revised and refined to produce this report.*

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Office of the Assistant Secretary
for Health
Washington DC 20201

The Honorable Louis W. Sullivan
Secretary of Health and Human Services

Dear Mr. Secretary:

I am pleased to submit to you *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. This document contains a national strategy for significantly improving the health of the Nation over the coming decade. It addresses the prevention of major chronic illnesses, injuries, and infectious diseases.

The Public Health Service has served as leader, convener, and facilitator over the three-year period of this report's development. However, it can truly be labelled a national, not just a Federal, initiative to focus existing knowledge, resources, and commitment to capitalize on our opportunities to prevent premature death and needless disease and disability. Thousands of professionals from many different disciplines, as well as many health advocates and consumers, have contributed substantially to produce this set of measurable targets to be achieved by the year 2000. They have voluntarily testified at public hearings, written eloquent letters and papers, engaged in extensive reviews of draft materials, and organized and attended informational forums in support of *Healthy People 2000*. The comprehensiveness and depth of this report stand as a tribute to their commitment to better health for Americans through prevention. In addition to their contribution, Federal staff from other departments, other Operating Divisions of this Department, and the Public Health Service Agencies, have worked above and beyond the call of duty to produce this national prevention strategy. The Institute of Medicine of the National Academy of Sciences has served as an important partner in our efforts to involve a broad consortium of participants in the process. Each deserves a special note of appreciation.

I commend *Healthy People 2000* to you and through you to the American people. This set of objectives for the year 2000 makes an important, compelling point to us and to all health policy makers: we can no longer afford *not* to invest in prevention. From the perspective of avoiding human suffering as well as saving wasteful costs for treating diseases and injuries that could have been prevented, the 1990s should be the decade of prevention in the United States.

With the submission of *Healthy People 2000*, I commit the Public Health Service to work toward achievement of these objectives for the coming decade.

Sincerely yours,

James O. Mason

James O. Mason, M.D., Dr.P.H.
Assistant Secretary for Health

Enclosure

Foreword

Americans today are taking a more active interest in their health than ever before. They are coming to realize the influence that they, themselves, can have on their own health destinies and on the overall health status of the Nation.

It wasn't always thus. Until fairly recently, we Americans gave little thought to health as a positive concept. The past 15 years or so, however, have witnessed important changes in our thinking about the protection and enhancement of personal health. Three of those changes are of great importance for the well-being of our people as we move into the final decade of this century.

First, personal responsibility, which is to say responsible and enlightened behavior by each and every individual, truly is the key to good health. Evidence of this still-evolving perspective abounds in our concern about the dangers of smoking and the abuse of alcohol and drugs; in the emphasis that we are placing on physical and emotional fitness; in our growing interest in good nutritional practices; and in our concern about the quality of our environment. We have become, in a word, increasingly health-conscious, increasingly appreciative of the extent to which our physical and emotional well-being is dependent upon measures that only we, ourselves, can affect.

We can control our health destinies in significant ways, then, but if we are to realize, fully, the benefits of assuming that control, and this is the second of the three points I would make, we must find the means of extending the benefits of good health to the most vulnerable among us.

The correlation between poor health and lower socio-economic status has been well documented, but that does not make it right or inevitable. Good health should not be seen, or, for that matter, be permitted to exist in fact, as a benefit for only those who can afford it; it should be available and accessible to every citizen.

Medical care, alone, will not eliminate the devastating impact of chronic disease on the disadvantaged, nor will it reduce, as much as we would like, the rate of infant mortality or the burden of homicide and violence or any of the other "health" problems that are borne by the poor in our society. If we are to extend the benefits of good health to all our people, it is crucial that we build in our most vulnerable populations what I have called a "culture of character," which is to say a culture, or a way of thinking and being, that actively promote responsible behavior and the adoption of lifestyles that are maximally conducive to good health. This is "prevention" in the broadest sense. It is also an absolute necessity, both because we are a humane and caring society and because, if we are to remain a vital society, we cannot afford to waste human resources. Good health must be an equal opportunity, available to all Americans.

Finally, health promotion and disease prevention comprise perhaps our best opportunity to reduce the ever-increasing portion of our resources that we spend to treat preventable illness and functional impairment. Smoking, for example, is the single most preventable cause of death and illness in this country. Smoking-related illnesses cost our health care system more than $65 billion annually.

AIDS is an almost entirely preventable disease. The cost of caring for a person with AIDS for his or her lifetime is, today, about $75,000. The annual cost of treating all diagnosed AIDS patients, about $4.3 billion this year, could climb as high as $13 billion by 1992, the Public Health Service estimates.

The yearly cost of treating alcohol and drug abuse is at least $16 billion. The total economic impact of alcohol and drug abuse, including not only treatment but premature death, accidents, crime, and lost productivity, is more than $110 billion annually.

We would be terribly remiss if we did not seize the opportunity presented by health promotion and disease prevention to dramatically cut health-care costs, to prevent the premature onset of disease and disability, and to help all Americans achieve healthier, more productive lives.

Healthy People 2000: National Health Promotion and Disease Prevention Objectives addresses these three points. It lays out a series of national opportunities. To support the development of these opportunities, a national consortium composed of nearly 300 national membership organizations and all of the State health departments joined the Department's Public Health Service to solicit and analyze comments and suggestions from people across the Nation. The Federal Departments of Agriculture, Defense, Education, Interior, Labor, and Transportation and the Environmental Protection Agency participated generously in the development of the national objectives. In regional and national hearings, the Public Health Service and its partner in this venture, the Institute of Medicine of the National Academy of Sciences, learned what people from many sectors of society consider to be the priorities for prevention in the coming decades.

This input has shaped the content of *Healthy People 2000* as it has evolved from its first drafts through extensive public review and comment to the final publication. Participants included health professionals and others in health-related industries. The Department has had the honor of serving as a convener and facilitator in developing these goals, but they truly belong to the Nation.

I commend this document for your consideration, to use as appropriate in your community. All those who participated in its development over the past three years can take pride in its clarity of vision. All of us can feel humility in the face of its monumental challenges, but we also can share a new sense of resolve to move forward to achieve a nation of healthy people.

Louis W. Sullivan, M.D.
Secretary

September 1990

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Acronyms and Abbreviations

ADAMHA	Alcohol, Drug Abuse, and Mental Health Administration
AHCPR	Agency for Health Care Policy and Research
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control
DOD	Department of Defense
DoEd	Department of Education
DOI	Department of the Interior
DOL	Department of Labor
DOT	Department of Transportation
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FSA	Family Support Administration
HCFA	Health Care Financing Administration
HRSA	Health Resources and Services Administration
IHS	Indian Health Service
NIH	National Institutes of Health
OHDS	Office of Human Development Services
PHS	Public Health Service
SSA	Social Security Administration
USDA	Department of Agriculture

Part I

Healthy People 2000

Contents

1. Introduction
2. The Nation's Health: Age Groups
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4. Goals for the Nation
5. Priorities for Health Promotion and Disease Prevention
6. Shared Responsibilities

1. Introduction

The year 2000 appears ahead on the calendar of our Nation's history as a turning point. It may well be like any other year in the ongoing lives of people who inhabit this country and the world. But from the perspective of history, the year 2000 will bring to its conclusion a tumultuous century, characterized by astounding scientific achievements, devastating world wars, and explosive population growth. It will inaugurate at once a new century and a new millennium, a future so vast in its human and historic dimensions that it defies prediction while posing momentous questions about social and economic viability and human vitality in the face of a new era.

The year 2000 connotes change. Its arrival contains enough power to shape that change, motivating actions that can improve American lives. The beginning of the twenty-first century beckons both with challenge and opportunity for improved health of Americans. We began the current century with a sense of fatalism about the Nation's health problems. As we reach its conclusion, we do so with confidence in our ability to control many of the events that form our health prospects. A century of biomedical research has made available sophisticated techniques for diagnosing and intervening against disease. Scientific studies of even the last generation have revealed much about the factors that predispose to various health threats and therefore about actions that each of us can take to control our risks for disease or disability.

We have learned that a fuller measure of health, a better quality of life, is within our personal grasp. If tobacco use in this country stopped entirely today, an estimated 390,000 fewer Americans would die before their time each year. If all Americans reduced their consumption of foods high in fat to well below current levels and engaged in physical activity no more strenuous than sustained walking for 30 minutes a day, additional results of a similar magnitude could be expected. If alcohol were never carelessly used in our society, about 100,000 fewer people would die from unnecessary illness and injury. Together, deaths from these causes comprise a sizable share of the 2.1 million deaths that occur annually and are examples of the impact of personal lifestyle choices on the health destiny of individual Americans and the future of the Nation.

New knowledge has brought with it both a keen sense of potential and a keen appreciation of how far most Americans, especially those with low incomes, are from that potential. Moreover, we are already feeling the effects of momentous new issues emerging on the horizon—the aging of our society, the prohibitive costs of many of the technologies developed for diagnosing and treating disease, and the ecologic consequences of industrialization and population growth.

These problems compel careful engagement on the national agenda. This report frames the elements of that agenda from the perspective of the potential to prevent unnecessary disease and disability and to achieve a better quality of life for all Americans. It grows out of a health strategy initiated in 1979 with the publication of *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*[7] and expanded with publication in 1980 of *Promoting Health/Preventing Disease: Objectives for the Nation*[8], which set out an agenda for the ten years leading up to 1990.

Healthy People 2000 offers a vision for the new century, characterized by significant reductions in preventable death and disability, enhanced quality of life, and greatly reduced disparities in the health status of populations within our society. It is the product of a national effort, involving professionals and citizens, private organizations and public agencies from every part of the country. Work on the report began in 1987 with the convening of a consortium that has grown to include almost 300 national membership organizations and all the State health departments (see Appendix B). The Healthy People 2000 Consortium, facilitated by the Institute of Medicine of the National Academy of Sciences, helped the United States Public Health Service to convene 8 regional hearings and received testimony from over 750 individuals and organizations. This testimony became the primary resource material for working groups of professionals to use in crafting the health objectives. After extensive public review and comment, involving more than 10,000 people, the objectives were refined and revised to produce this report.

This report does not reflect the policies or opinions of any one organization, including the Federal government, or any one individual. It is the product of a national process. It is deliberately comprehensive in addressing health promotion and disease prevention opportunities in order to allow local communities and States to choose from among its recommendations in addressing their own highest priority needs.

The Year 2000: A Profile of The American People

Over the course of the 1990s, the profile of the American population will change. Barring unforeseeable major events, the demographic contrasts between 1990 and 2000 will be evident, if not dramatic. Based on the best available information:

- By the year 2000, the overall population of the United States will have grown about 7 percent to nearly 270 million people, with the slowest rate of growth in the Nation's history projected between 1995 and 2000.[12] Average household size is expected to decline from 2.69 in 1985 to 2.48 in 2000, with husband-wife households decreasing from 58 to 53 percent of all households.[1]
- By the year 2000, the American population will be older, continuing the aging trend of the present century, with a median age of more than 36 years, compared to 29 years in 1975. The number of children under age 5 will actually decline from more than 18 million to fewer than 17 million between 1990 and 2000. By 2000, the 35 million people over age 65 will represent about 13 percent of the population, in contrast to 8 percent in 1950. The population of the "oldest old"—those over age 85—will have increased by about 30 percent to a total of 4.6 million by 2000.[12]
- By the year 2000, the racial and ethnic composition of the American population will form a different pattern. Whites, not including Hispanic Americans, will represent a smaller proportion of the total, declining from 76 to 72 percent of the population. One particularly fast-growing population group will be Hispanics, some estimates forecasting a rise from 8 to 11.3 percent, to more than 31 million Hispanic people by 2000. Blacks will increase their proportion from 12.4 to 13.1 percent. Other racial groups, including American Indians and Alaska Natives and Asians and Pacific Islanders, will increase from 3.5 to 4.3 percent of the total.[11,12]
- By the year 2000, economic expansion will create up to 18 million new jobs, but the number of young job seekers will decline due to a shift in birth rates. Reflecting changes in racial and ethnic populations, the entry rate of blacks, Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives into the workforce will be higher than for whites. Women of all racial and ethnic groups will be the major source of new entrants into the labor force, comprising 47 percent of the total workforce by 2000, compared to 45 percent in 1988. Half of women in the workforce will be between the ages of 35 and 54, a shift from 1986 when the majority were between 25 and 44. Between 1988 and the year 2000, white men will comprise only 25 percent of the net growth of the labor force.[4] Occupations most likely to grow include service, professional, technical, sales, and executive and management positions.

- By the year 2000, the American population may increase by up to 6 million people through immigration. Certain States and cities, especially those on the east and west coasts, can be expected to receive a disproportionately large number of these immigrants.[6]

While 10 years in the history of a nation seems a comparatively short time, it is long enough to alter population patterns in ways that are of great importance to current and future decision-makers seeking to design an effective program of health promotion and disease prevention. Informed estimates about the changes in households and family constellations, age groups, racial and ethnic populations, the workforce, and immigration can provide a context that is crucial to decisions and programs to achieve a nation of healthy people.

Promoting Health and Preventing Disease: Progress

Ten years is also long enough to bring about marked changes in the Nation's health (Fig. 1.1). During the 1980s, there were major declines in death rates for three of the leading causes of death among Americans: heart disease, stroke, and unintentional injuries. Infant mortality also decreased, and some childhood infectious diseases were nearly eliminated. Gains in these areas give hope that the 1990s will see more progress, especially for diseases such as cancer that have so far not declined.

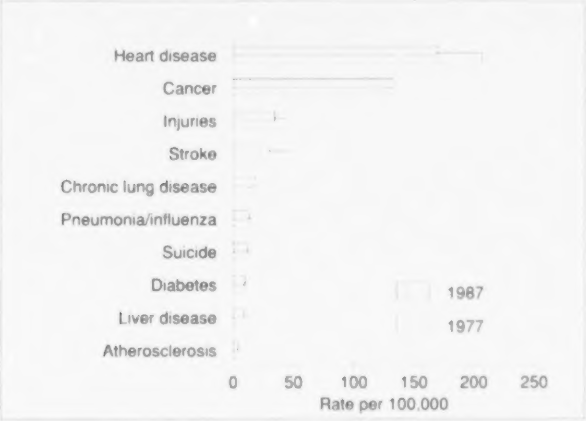

Fig. 1.1

Leading causes of death, U.S. population (age-adjusted)

Source: *Health, United States, 1989 and Prevention Profile* and National Center for Health Statistics (CDC)

Much of our progress mirrors reductions in risk factors. The more than 40-percent drop in heart disease mortality since 1970 reflects dramatic increases in high blood pressure detection and control, a decline in cigarette smoking, and increasing awareness of the role of blood cholesterol and dietary fats. The precipitous drop in stroke death rates—over 50 percent in the same period—also reflects gains in hypertension control and declines in smoking.

Unintentional injuries have declined. In the last decade and a half, traffic fatalities dropped by one-third, partly reflecting increased use of seatbelts, lower speed limits, and declines in alcohol abuse. Recent reductions in fatal occupational injuries have been facilitated by enhanced occupational safety standards. Studies are beginning to yield promising approaches to alcohol and other drug problems.

Progress has been made in the health status of children as well. In 1987, we achieved a record low rate of 10.1 infant deaths per 1,000 live births.[5] Although still higher than rates in many other developed countries, this figure represents a 65-percent decline since 1950. Preventable childhood diseases, such as mumps, measles, and rubella, are now unusual in this country due to widespread use of vaccines. Immunization levels among school children exceed 95 percent for most of these diseases.

In other areas, progress is mixed. Lung cancer deaths have increased steadily since 1960, although rates among men aged 50 and younger began to turn around in the 1980s, a sign that changes in smoking patterns are beginning to have an effect. Breast cancer death rates remain stubbornly high, as they have for 35 years, despite the fact that early detection and treatment could reduce deaths due to breast cancer by an estimated 30 percent.[10] For cervical cancer, the widespread use of Pap tests has contributed to a 73-percent reduction in death rates from the disease since 1950.

Changing trends point to still other areas that require attention. In the past decade, rising rates of syphilis and the emergence of HIV infection point to the need for new strategies to address these public health problems. Air and water quality have improved since the Environmental Protection Agency and the States began regulating them in the early 1970s. However, the last decade has seen increasing concern expressed by individuals, communities, and public agencies about toxic substances, solid waste, and global environmental change.

When taken together, the progress of the last ten years has brought the Nation a considerable distance toward the health goals set forth in *Healthy People* in 1979. That report targeted for the year 1990 a 35-percent reduction in infant mortality, a 20-percent reduction in death rates for children aged 1 through 14, a 20-percent reduction in death rates for adolescents and young adults aged 15 through 24, and a 25-percent reduction in death rates for adults aged 25 through 64. For older adults, aged 65 and older, the target was a 20-percent reduction in days of disability. Figure 1.2 summarizes progress toward these goals, as of the most recent year for which data are available.

Life Stage	*1990 Target**	*1987 Status*
Infants	35% lower death rate	28% lower
Children	20% lower death rate	21% lower
Adolescents/ Young Adults	20% lower death rate	13% lower
Adults	25% lower death rate	21% lower
Older Adults	20% fewer days of restricted activity	17% lower

* Relative to baseline (1977 data)

Fig. 1.2

Progress toward 1990 life stage goals—1987

Source: *Health, United States, 1989 and Prevention Profile*

A more detailed record of national efforts in health promotion and disease prevention is provided by tracking progress toward achievement of the 226 measurable objectives that were laid out in *Promoting Health/Preventing Disease: Objectives for the Nation* in 1980—objectives established to achieve the broad goals of *Healthy People*. As of 1987, it appeared that nearly half of the objectives had been achieved or were well on their way toward achievement by 1990; about one-quarter appeared unlikely to be achieved; and the status of the other quarter was uncertain because data were unavailable for tracking their progress.[5] Among the 15 priority areas that were the focus of the 1990 objectives, areas in which progress seemed to lag included pregnancy and infant health, nutrition, physical fitness and exercise, family planning, sexually transmitted diseases, and occupational safety and health. On the other hand, priority areas related to high blood pressure control, immunization, control of infectious diseases, unintentional injury prevention and control, smoking, and alcohol and drugs showed substantial progress.[5]

Healthy People: The Economics of Prevention

Despite the overall health improvements achieved as a result of preventive interventions, the Nation continues to be burdened by preventable illness, injury, and disability. In 1960, the share of the Gross National Product (GNP) going to medical services was 5 percent. It is estimated to reach nearly 12 percent in 1990.[2] Lost economic productivity attendant to illness and early death compounds the impact of this problem, so that in 1980 the total costs of illness equalled nearly 18 percent of GNP. Injury alone now costs the Nation well over $100 billion annually, cancer over $70 billion, and cardiovascular disease $135 billion.[3,9]

Sophisticated technology for the diagnosis and treatment of disease conditions has outstripped society's ability to pay for it. But many of these expenses are avoidable (Fig. 1.3). Coronary artery disease affects approximately 7 million Americans and causes about 1.5 million heart attacks and 500,000 deaths a year. The number of coronary

Condition	*Overall magnitude*	*Avoidable intervention*[1]	*Cost per patient*[2]
Heart disease	7 million with coronary artery disease 500,000 deaths/yr 284,000 bypass procedures/yr	Coronary bypass surgery	$30,000
Cancer	1 million new cases/yr 510,000 deaths/yr	Lung cancer treatment	$29,000
		Cervical cancer treatment	$28,000
Stroke	600,000 strokes/yr 150,000 deaths/yr	Hemiplegia treatment and rehabilitation	$22,000
Injuries	2.3 million hospitalizations/yr 142,500 deaths/yr 177,000 persons with spinal cord injuries in the United States	Quadriplegia treatment and rehabilitation	$570,000 (lifetime)
		Hip fracture treatment and rehabilitation	$40,000
		Severe head injury treatment and rehabilitation	$310,000
HIV infection	1-1.5 million infected 118,000 AIDS cases (as of Jan 1990)	AIDS treatment	$75,000 (lifetime)
Alcoholism	18.5 million abuse alcohol 105,000 alcohol-related deaths/yr	Liver transplant	$250,000
Drug abuse	Regular users: 1-3 million, cocaine 900,000, IV drugs 500,000, heroin Drug-exposed babies: 375,000	Treatment of drug-affected baby	$63,000 (5 years)
Low birth weight baby	260,000 LBWB born/yr 23,000 deaths/yr	Neonatal intensive care for LBWB	$10,000
Inadequate immunization	Lacking basic immunization series: 20-30%, aged 2 and younger 3%, aged 6 and older	Congenital rubella syndrome treatment	$354,000 (lifetime)

[1] Examples (other interventions may apply).

[2] Representative first-year costs, except as noted. Not indicated are non-medical costs, such as lost productivity to society.

Fig. 1.3

Costs of treatment for selected preventable conditions

Source: Data compiled from various sources by the Office of Disease Prevention and Health Promotion bypass procedures performed each year is approaching 300,000, each *one* of these procedures at a cost of approximately $30,000. A representative cost for treating a single case of lung cancer is $29,000 and $28,000 for invasive cervical cancer. A liver transplant for alcoholic cirrhosis can cost $250,000 or more. The lifetime treatment costs per patient are $570,000 for quadriplegia from a spinal cord injury, $354,000 for congenital rubella syndrome, and $75,000 for Acquired Immunodeficiency Syndrome (AIDS). Yet virtually all of these conditions are preventable. Mobilizing the considerable energies and creativity of the Nation in the interest of disease prevention and health promotion is an economic imperative.

Healthy People 2000: The Challenge and Goals

The Nation has within its power the ability to save many lives lost prematurely and needlessly. Implementation of what is already known about promoting health and preventing disease is the central challenge of *Healthy People 2000*. But *Healthy People 2000* also challenges the Nation to move beyond merely saving lives. The health of a people is measured by more than death rates. Good health comes from reducing unnecessary suffering, illness, and disability. It comes as well from an improved quality of life. Health is thus best measured by citizens' sense of well-being. The health of a Nation is measured by the extent to which the gains are accomplished for all the people.

The challenge of *Healthy People 2000* is to use the combined strength of scientific knowledge, professional skill, individual commitment, community support, and political will to enable people to achieve their potential to live full, active lives. It means preventing premature death and preventing disability, preserving a physical environment that supports human life, cultivating family and community support, enhancing each individual's inherent abilities to respond and to act, and assuring that all Americans achieve and maintain a maximum level of functioning.

The purpose of *Healthy People 2000* is to commit the Nation to the attainment of three broad goals that will help bring us to our full potential (Fig. 1.4). We have a broad array of opportunities to achieve our goals. This report presents many of these opportunities in the form of measurable targets, or objectives, to be achieved by the year 2000, organized into 22 priority areas. The first 21 of these areas are grouped into three broad categories: health promotion; health protection; and preventive services (Fig. 1.5).

- **Increase the span of healthy life for Americans**
- **Reduce health disparities among Americans**
- **Achieve access to preventive services for all Americans**

Fig. 1.4

Healthy People 2000 Goals

Health promotion strategies are those related to individual lifestyle—personal choices made in a social context—that can have a powerful influence over one's health prospects. These priorities include physical activity and fitness, nutrition, tobacco, alcohol and other drugs, family planning, mental health and mental disorders, and violent and abusive behavior. Educational and community-based programs can address lifestyle in a crosscutting fashion.

Health protection strategies are those related to environmental or regulatory measures that confer protection on large population groups. These strategies address issues such as unintentional injuries, occupational safety and health, environmental health, food and drug safety, and oral health. Interventions applied to address these issues are generally

Fig. 1.5

Healthy People 2000 Priority Areas

Health Promotion

1. Physical Activity and Fitness
2. Nutrition
3. Tobacco
4. Alcohol and Other Drugs
5. Family Planning
6. Mental Health and Mental Disorders
7. Violent and Abusive Behavior
8. Educational and Community-Based Programs

Health Protection

9. Unintentional Injuries
10. Occupational Safety and Health
11. Environmental Health
12. Food and Drug Safety
13. Oral Health

Preventive Services

14. Maternal and Infant Health
15. Heart Disease and Stroke
16. Cancer
17. Diabetes and Chronic Disabling Conditions
18. HIV Infection
19. Sexually Transmitted Diseases
20. Immunization and Infectious Diseases
21. Clinical Preventive Services

Surveillance and Data Systems

22. Surveillance and Data Systems

Age-Related Objectives

Children
Adolescents and Young Adults
Adults
Older Adults

not exclusively protective in nature—there may be a substantial health promotion element as well—but the principal approaches involve a communitywide rather than individual focus.

Preventive services include counseling, screening, immunization, or chemoprophylactic interventions for individuals in clinical settings. Priority areas for these strategies include maternal and infant health, heart disease and stroke, cancer, diabetes and chronic disabling conditions, HIV infection, sexually transmitted diseases, and infectious diseases. Crosscutting professional and access considerations in the delivery of clinical preventive services are also addressed.

A special category has been established for surveillance and data systems. Given the centrality of monitoring progress toward the stated targets in the overall approach of *Healthy People 2000*, the integrity of our data collection efforts at every level is critical. Objectives have therefore been established to improve those efforts.

Finally, because issues and approaches vary by age, chapters are included for each of four age groups: children, adolescents and young adults, adults, and older adults. Objectives related to each of these age groups are found throughout the priority areas. To give them special emphasis, some of the key targets have been collected and presented according to these four ages.

The full set of objectives with commentary is presented as Part II of *Healthy People 2000*. The material presented here in Part I defines the overall national agenda and outlines goals, objectives, and strategies for change. Chapter 2 of Part I reviews the challenges for people in various age groups. Chapter 3 addresses high risk populations. Chapter 4 presents the broad goals. Chapter 5 gives synopses of each of the priority areas with selected examples of the objectives addressed. Chapter 6 reviews the challenge for implementation for various groups throughout the Nation.

The last chapter deserves special comment. *Healthy People 2000* uses the three approaches of health promotion, health protection, and preventive services as organizing categories, but running through the priority areas and the objectives is a common theme of shared responsibility for carrying out this national agenda. Achievement of the agenda depends heavily on changes in individual behaviors. It requires use of legislation, regulation, and social sanctions to make the social and physical environment a healthier place to live. It calls on medical and health professionals to prevent, not just to treat, the diseases and conditions that result in premature death and chronic disability. All are necessary. None is sufficient alone to achieve *Healthy People 2000*'s goals and objectives.

The challenge spelled out in *Healthy People 2000* calls upon communities to translate national objectives into State and local action. To accomplish this, a new edition of Model Standards—*Healthy Communities 2000: Model Standards, Guidelines for Attainment of Year 2000 Objectives for the Nation*—provides a flexible planning tool to enable communities to share in the various efforts necessary to attain these objectives. The volume covers the priority areas of *Healthy People 2000* and includes all of the national objectives that call for action at the community level. It offers community implementation strategies for putting the objectives of *Healthy People 2000* into practice and encourages communities to establish achievable community health targets.

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2. The Nation's Health: Age Groups

Responding effectively to the health challenges of the 1990s will require a clear understanding of the health-related threats and opportunities facing all Americans. One way to grasp the dimensions and the realities of the tasks laid out in this report is to consider the special problems of infants, children, adolescents and young adults, adults, and older adults. The health profiles of these age groups can help us remember that the improvements envisioned here are not generalizations about the population, but prescriptions for healthier lives for each of us—newborn babies, boys and girls, teenagers and young people, women and men, and people in their later years.

Infants

One of the most heartening indicators of our Nation's improvement in health during the 20th century has been the steady decline in the infant mortality rate. Between 1950 and 1987, the infant mortality rate in the United States dropped from 29.2 per 1,000 live births to 10.1. Eight years after *Healthy People* (1979) posed the challenge of a 35-percent reduction in infant mortality by 1990, we had achieved a reduction of 28 percent in that rate.[38]

Yet comparison of even our 1987 rate of infant mortality with that of other industrialized nations demonstrates the continued importance of efforts in this regard. Moreover, the continuing disparities between minority and majority populations represent a major health challenge. In 1987, the mortality rate for black infants was still over twice that of whites, and rates for some American Indian tribes and for Puerto Ricans were also considerably higher than for white infants.[38]

Infant mortality rates provide a summary measure of the effects of major health threats to the developing fetus and newborn baby. But for every 10 babies who die, 990 live. Some of those who live have been harmed, often permanently, by unhealthy beginnings. The quality, not just the quantity, of their lives is a function of health during both the prenatal and infant periods.

Technology has contributed significantly to the improved prospects for infant survival over the past several decades. Neonatal intensive care, new surgical techniques, and other medical interventions save lives and even overcome conditions that formerly guaranteed life-long disability. But opportunities for primary prevention offer new frontiers for improving infant health in the coming years. Some opportunities will result from breakthroughs in understanding the genetic origins of human diseases; most will be in areas of personal lifestyle and use of existing health interventions.

Major Health Concerns

No period of life is more important to good health than the months before birth. The prenatal period can be the starting time for good health or it may be the beginning of a lifetime of illness and shortened life expectancy. Each year in the United States, nearly 39,000 babies—about 1 percent of those born—die before the age of one, two-thirds during their first month.[38] Four causes account for more than half of all infant deaths: disorders relating to low birth weight, congenital anomalies, sudden infant death syndrome (SIDS), and respiratory distress syndrome (Fig. 2.1).

Low birth weight (less than 2,500 grams) occurs in about 7 percent of all live births and is the greatest single hazard to infant health.[38] This dangerous condition has been linked to several preventable risks, including lack of prenatal care, maternal smoking, use of

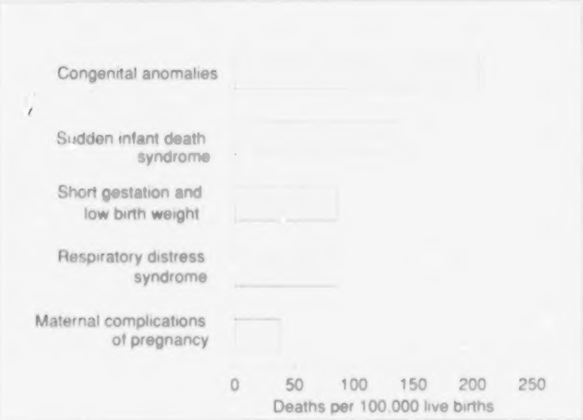

Fig. 2.1

Leading causes of infant mortality (1987)

Source: *Health, United States, 1989 and Prevention Profile*

alcohol and other drugs, and pregnancy before age 18. Approximately three-quarters of deaths in the first month and 60 percent of all infant deaths occurred among low-birth-weight infants. Low socioeconomic and educational levels are often associated with low birth weight. Black infants are more than twice as likely as white babies to be born weighing less than 2,500 grams.[38]

Very low birth weight (less than 1,500 grams) is associated with 40 percent of all infant deaths. Very low birth weight declined slightly from 1970 to 1981 but rose by about 0.9 percent per year from 1981 to 1986.[38] Low-birth-weight babies are nearly twice as likely to have severe developmental delay or congenital anomalies.[68] These babies are also at a significantly greater risk of such long-term disabilities as cerebral palsy, autism, mental retardation, and vision and hearing impairments, and other developmental disabilities.

Congenital anomalies (birth defects) most likely to be lethal include malformations of the brain and spine, heart defects, and combinations of several malformations. Infant mortality from congenital anomalies has been declining, although the last decade has seen slight increases in the incidence of some birth defects. In 1985, about 11,000 babies were born with moderate to severe impairments.[40] Congenital anomalies, when they do not result in death, may cause disability. One-fourth of all congenital anomalies are caused by genetic factors, suggesting a need for preconception genetic counseling for both men and women. Environmental hazards and alcohol use during pregnancy are other important factors. Fetal alcohol syndrome (FAS) affects as many as 1 to 3 infants per 1,000 live births.[38] In some populations, the incidence is higher. A similar syndrome has been observed in babies born to drug-addicted mothers.

After the first month of life, sudden infant death syndrome (SIDS) is the leading cause of infant mortality, accounting for about one-third of all deaths in this period.[59] The causes of SIDS are not known, but risk factors include maternal smoking and drug use, teenage birth, and infections late in pregnancy. Infants born to families with a history of SIDS are also at risk.

Respiratory distress syndrome occurs primarily in premature babies whose lungs are not fully developed. Therefore, risk factors for respiratory distress syndrome include those for prematurity.

Increasing rates of HIV infection and cocaine addiction in newborns are also of concern. By January 1990, more than 2,000 babies had been born with HIV infection, and some hospitals from urban communities reported rates of cocaine-addicted babies as high as 20 percent.[14] The long term consequences of these alarming trends are inestimable.

Maternal Factors

Several major maternal risk factors are associated with low birth weight, as well as with other major causes of infant death and disability, including:

- Cigarette smoking;
- Alcohol and other drug use;
- Age;
- Nutrition;
- Socioeconomic status;
- Environmental hazards.

An estimated 25 percent of pregnant women smoke throughout their pregnancies.[66] There is some evidence that pregnant women are quitting smoking and that smoking prevalence during pregnancy is decreasing for some but not all groups. Women in the lowest age and socioeconomic groups have the highest likelihood of smoking during pregnancy.[32] Maternal cigarette smoking has been linked with from 20 to 30 percent of all low-birth-weight births in the United States.[33] If all pregnant women refrained from smoking, fetal and infant deaths would be reduced by approximately 10 percent, saving about 4,000 infants per year.

Heavy alcohol consumption during pregnancy is associated with increased risk for fetal alcohol syndrome, including growth retardation, facial malformations, mental retardation, and central nervous system dysfunctions. A safe amount of alcohol consumption during pregnancy has not been documented; however, adverse effects are associated primarily with heavy consumption during the early months of pregnancy.

The effects of maternal drug use on pregnancy outcome have not been fully explored. Studies of the effects of maternal drug abuse are hampered by difficulties in distinguishing effects of drug exposure from those resulting from inadequate prenatal care or poor maternal health and nutrition. However, low birth weight and prematurity are the most serious known consequences of maternal illicit drug use. Risks due to maternal drug abuse are heightened by lack of prenatal care. Between 50 and 75 percent of substance-abusing women receive little or no prenatal care.[30] Reliable data on the prevalence of substance abuse by pregnant women is also difficult to obtain. Extrapolations of local studies suggest that mothers of as many as 10 percent of babies born each year have used one or more illicit substances during their pregnancy.[14,15,25]

Both pregnant women and newborn infants are particularly vulnerable to poor nutrition. Women who gain less than 21 pounds during pregnancy are more than twice as likely to deliver low-birth-weight infants than those who gain more.[71] Nutrition is also vital to growth and development of infants, including brain function. For most mothers, breastfeeding is an ideal way of nurturing their infants.

Maternal age is a risk factor at both ends of the childbearing years: under age 17 and over age 40. Teenage women, more than a million of whom become pregnant each year in the United States, are at particular risk of having low-birth-weight babies.[58] Birth rates for women aged 15 through 19 are virtually unchanged since 1980, remaining at more than 50 live births per 1,000 women.[2] Infants born to women over age 40 experience higher rates of congenital anomalies, such as Downs Syndrome.

Women with less than 12 years of education, an important element of socioeconomic status, are about 70 percent more likely to give birth to a low-birth-weight baby or experience an infant death than women with more than 12 years of education.[31] Similarly, poor pregnancy outcomes have been linked to other indicators of lower socioeconomic status such as lack of health insurance and poor nutrition.

Congenital anomalies may be caused by environmental factors such as viruses, chemicals, and radiation. Toxic substances can affect the fetus directly, through exposure of the mother, and indirectly, by altering maternal and paternal germ cell chromosomes. Industrial toxins, such as lead, vinyl chloride, and hydrocarbons, may affect workers in industrial plants. The reproductive effects of workplace toxins, however, are still uncertain and controversial.

Prenatal Care

Numerous studies have demonstrated that early and comprehensive prenatal care reduces rates of infant death and low birth weight. An expectant mother with no prenatal care is three times as likely to have a low-birth-weight baby. The effect of early prenatal care is especially evident in studies of high-risk groups, such as adolescents and poor women.[27,58] About 76 percent of women receive prenatal care, but rates are considerably lower for many minority groups.[73]

The 1970s saw significant increases in early prenatal care, especially in groups with the lowest levels of care. Since 1980, however, the proportion of women who begin prenatal care in the first 3 months of pregnancy has reached a plateau among all racial and ethnic groups.[38]

Prenatal care can save money. The Office of Technology Assessment has studied the potential effectiveness of prenatal care for all pregnant women living in poverty. Its findings indicate that for every instance of low birth weight averted by prenatal care, the United States health care system saves between $14,000 and $30,000 in health care costs associated with this condition.[58]

Children

The health profile of American children has shifted markedly in the past 40 years. Once dominated by the threat of major infectious diseases, such as polio, diphtheria, scarlet fever, pneumonia, measles, and whooping cough, today, widespread immunization has virtually eliminated many of these diseases. Others are in steep decline.

Between 1977 and 1987, the rate of childhood deaths declined 21 percent, exceeding the 1990 target set in *Healthy People*. Unintentional injuries have now replaced infectious diseases as the cause of greatest concern for the health of children. But even for the leading cause of injury-related deaths among children—motor vehicle crashes—heartening progress has occurred. Since 1970, the rate of childhood deaths from motor vehicle crashes has declined 41 percent for children aged 1 through 4, and 31 percent for those aged 5 through 14, primarily due to the use of car seats and seatbelts.[38] Other causes of injury-related deaths among children—drowning, falls, poisoning, fires—have also declined as a result of improved protections, with the sole exception of child homicide.

Several threats to children's health are associated with low socioeconomic status. Mental retardation, learning disorders, emotional and behavioral problems, and vision and speech impairments all appear to be more prevalent among children living in poverty, often in inner cities, than among those at higher socioeconomic levels.[62] An accurate profile of the health of U.S. children, therefore, must go beyond mortality and morbidity data. It must also consider emotional, psychological, and learning problems, the social and environmental risks to which they are related, and the total costs to the Nation.

Major Health Concerns

The leading cause of death in childhood—unintentional injuries—not only accounts for the most deaths but also is among the most preventable (Fig. 2.2). Other major, preventable problems include homicide, suicide, child abuse and neglect, developmental problems, and lead poisoning.

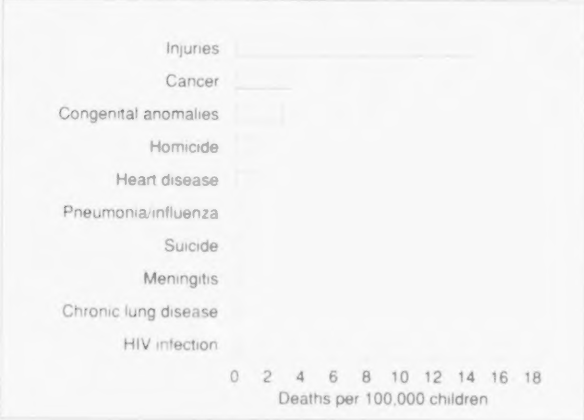

Fig. 2.2

Leading causes of death for children aged 1 through 14 (1987)

Source: National Center for Health Statistics (CDC)

Nearly half of all childhood deaths are due to unintentional injuries, and about half of these stem from motor vehicle crashes. Declines in childhood deaths from motor vehicle crashes are due in part to increasing use of child safety seats and safer automobile design. In one of the major public health successes of the decade, all 50 States now require safety restraints for young children, contributing to a 36-percent decline in motor vehicle fatalities in this age group between 1980 and 1984.[47] However, many States still do not mandate child restraints for children over age 5, and in some States there is no requirement after age 3 or 4. Furthermore, although studies suggest that 4 out of 5 passengers under age 5 now use occupant protection systems, many of the child safety seats in use have been found to be either not attached to the car seat or attached incorrectly.[48]

Drownings and fires account for most other injury-related deaths among children. Drownings are most frequent in swimming pools and home spas among children under 5. Household fires are a particular risk to children because they have more difficulty escaping than adults and are less likely to survive fire-related injuries. Deaths from fires are often due to asphyxiation and traumatic injuries, as well as burns. Children under age 5 who live in substandard housing without smoke detectors are at special risk.[24]

Injuries from falls and poisonings are not major causes of death in children but do cause many nonfatal injuries. Playground equipment and upper-story windows are frequently implicated in fall-related injuries in children.

Many injuries can be and are being prevented. During the last decade, improved safety measures have reduced fatalities. These measures include swimming pool and spa covers and childproof enclosures; child-resistant packaging for prescription drugs and some other hazardous materials; safer playground equipment; and smoke detectors. All of these, plus increased public awareness of injuries and their prevention, have helped save lives, and their wider use could save many more.

Some infections and respiratory illnesses remain problems for children. For example, influenza and other respiratory problems are the chief illness-related reasons that children miss school. In addition, the increased number of reports of asthma among children, especially those living in cities, has raised concern in recent years.[38]

Violence toward children has become of increasing concern as an American health issue, with rapidly rising rates of reported cases of child deaths due to violence. The periodic Study of National Incidence of Child Abuse and Neglect estimated that, in 1986, nearly 2 percent of children—or more than 1,000,000—were demonstrably harmed by abuse or neglect. The most common kind of abuse identified was physical, followed by emotional and sexual; the most common kind of neglect was educational, followed by physical and emotional. Substantial increases in reported physical and sexual abuse cases have occurred since 1980, but the 1986 study concluded that this was due more to improved reporting, reflecting greater public and professional awareness of the problem, than to an actual increase in child abuse. On the other hand, the study also demonstrated that many incidents of child maltreatment still go unreported.[75]

Developmental Problems

Psychological, emotional, and learning disorders are on the rise among children, as are chronic physical conditions such as hearing and speech impairment. Low-income children are at a significantly higher risk for such problems.[62]

One contributor to developmental problems in children is lead poisoning. In 1984, an estimated 3,000,000 children between 6 months and 5 years of age had blood lead levels above 15 µg/dL and 250,000 had levels above 25 µg/dL, making lead poisoning one of the Nation's most prevalent childhood threats. Severe lead poisoning can lead to profound mental retardation, coma, seizures, and death. Even low levels of exposure can impair central nervous system function, causing delayed cognitive development, hearing problems, growth retardation, and metabolic disorders.[1] Reduced lead in gasoline, air, and food; and reduced industrial emissions have produced lower mean blood lead levels nationwide. Nevertheless, homes and play areas, particularly in substandard housing areas, remain a significant source of this toxin in children's blood. The chief sources of lead exposure are thought to be old flaking lead-based paint, dust, and soil.

Healthy Child Development

Childhood is the prime time of human development. This is no less true for development of good health than it is for social, educational, emotional, and moral development. It may be easier to prevent the initiation of some behaviors, such as smoking and alcohol and drug abuse, than to intervene once they have become established. Likewise, it may be easier to establish healthful habits, such as those related to basic hygiene and those related to dietary and physical activity patterns, during childhood than later in life. Childhood is the opportune period for such healthy development.

Early use of tobacco, alcohol, and marijuana is associated with alcohol and other drug abuse later in adolescence or adulthood.[17] While most smokers start when they are young teenagers, many start even earlier. About one-quarter of high school seniors who have ever smoked report that they smoked their first cigarette by grade 6, over half by grades 7 or 8, and three-quarters by grade 9. Although cigarette smoking is declining among all age groups, those who do smoke are starting at younger ages. A wide array of factors promote smoking by children, including peer pressure, parental smoking behavior, lack of knowledge and understanding of health consequences, advertising and promotion, and the easy availability of cigarettes in unsupervised vending machines.[57]

Although the average age of first use of alcohol and marijuana is 13, pressure to begin use starts at even younger ages. Elementary school students report peer pressure to try beer, wine, and distilled spirits. Moreover, 26 percent of 4th graders and 40 percent of 6th graders reported that many of their peers had tried beer, wine, distilled spirits, or wine coolers.[51]

Lifetime diet and exercise patterns may also be established in childhood. Fat makes up more than 36 percent of calories in the average American diet, a figure that is too high according to most experts. It is recommended that children over 2, as well as adults, reduce that figure to no more than 30 percent and that saturated fats be reduced to less than 10 percent of calories. Exercise habits established in childhood may help in maintaining a physically active lifestyle throughout adolescence and adulthood. Both moderate and vigorous physical activity on a regular basis help promote overall fitness and control weight. In 1984, a little more than two-thirds of children aged 10 through 17 engaged regularly in vigorous physical activity.[72] A comparison of body composition among children between 1965 and 1985 showed a steady increase in skinfold thicknesses, a measure of body fat.

Most schools provide some health education, although the amount and content vary among States and school districts. According to recent data:

- 75 percent of school districts have antismoking education in elementary schools;[54]
- 63 percent of school districts and private schools provide some instruction concerning alcohol and other drugs and 39 percent provide related counseling;[64]
- 12 States require nutrition education from preschool through grade 12;[4]
- 32 percent of children in grades 1 through 6 and 44 percent of those in grades 7 through 9 participate in daily physical education programs, but only 1 State requires daily physical education from kindergarten through grade 12;[72]
- 25 States require comprehensive school health education programs and 9 States recommend that local school districts implement such programs.[18]

Appropriate educational strategies vary according to community and age group, but age-appropriate health education curricula can change attitudes and behavior.

Schools can also be used to facilitate children's access to basic health services. Although the traditional childhood infectious diseases have declined steeply since vaccines became available, immunization is still incomplete. Better school-based programs, information for the public, and more immunization education for physicians and health professionals are needed.

Improving the health of American children requires a wide range of social and economic interventions. For example, more and better preschool education for disadvantaged children and children with disabilities could help to detect and prevent developmental problems. Educational and support programs for parents in high-risk environments hold promise for reducing child abuse and other health problems, such as lead poisoning. The complex developmental problems besetting children in these environments demand concerted efforts by many different sectors of society. Primary care health providers, social service professionals, health educators, housing officials, community groups, and concerned individuals can each make a difference in the health of American children.

Adolescents and Young Adults

The years from 15 through 24 are a time of changing health hazards. Caught up in change and experimentation, young people also develop behaviors that may become permanent. Attitudes and patterns related to diet, physical activity, tobacco use, safety, and sexual behavior may persist from adolescence into adulthood.

The dominant preventable health problems of adolescents and young adults fall into two major categories: injuries and violence that kill and disable many before they reach age 25 and emerging lifestyles that affect their health many years later.

Two major causes of death in older age groups, heart disease and cancer, have declined sharply among adolescents since 1950—heart disease by 60 percent and cancer by 40 percent.[38] Although they are still important threats in this age group, these diseases are overshadowed by the three leading causes of death: unintentional injuries, homicide, and suicide (Fig. 2.3).

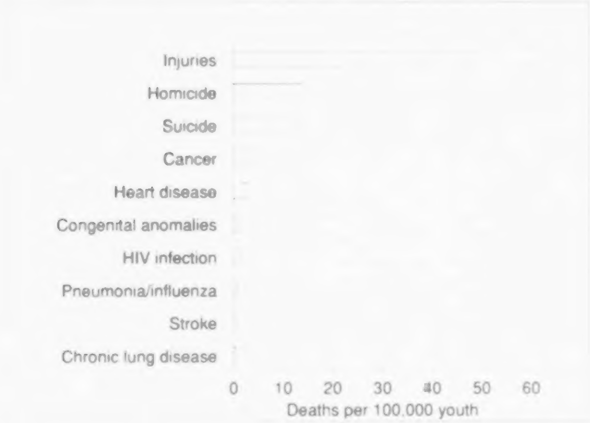

Fig. 2.3

Leading causes of death for youth aged 15 through 24 (1987)

Source: *Monthly Vital Statistics Report*, Supplement, September 26, 1989

Motor Vehicle Crash Injuries

Unintentional injuries account for about half of all deaths among people aged 15 through 24; three-quarters of these deaths involve motor vehicles. More than half of all fatal motor vehicle crashes among people in this age group involve alcohol. Young white men had the highest death rates for motor vehicle crashes in 1987, at 59 per 100,000. The rate for young black men was much lower: 36 per 100,000. The rate was lower yet for women of both races.[38]

Motor vehicle crash deaths decreased in this age group in the early 1980s, possibly because of the raised minimum drinking age in many States and decreasing alcohol use. The recent trend, however, is upward.[38] The raised speed limit on rural interstate highways may be a factor in this trend. Further, nearly 60 percent of 8th and 10th graders reported not using seatbelts on their most recent ride.[5]

Homicide and Suicide

Homicide is the second leading cause of death among all adolescents and young adults, and it is the number one cause among black youth. The homicide rate for young black men increased by 40 percent between 1984 and 1987 to nearly 86 per 100,000, more than 7 times the rate for young white men. Race, however, appears not to be as important a risk factor for violent death as socioeconomic status. Racial differences in homicide rates are significantly reduced when socioeconomic factors are taken into account.

As with motor vehicle accidents, about half of all homicides are associated with alcohol use. Nationwide, 10 percent are drug-related, but in many cities this rate is substantially higher. Over half of all homicide victims are relatives or acquaintances of the perpetrators. Most are killed with firearms.[11]

Suicide is the second leading cause of death among young white men aged 15 to 24, and rates continue to climb. From 1950 to 1987 the death rate from suicide in this group increased from under 7 to about 23 per 100,000 population. The rate of suicides among black adolescents and young adults is half of that among whites. White men between 20 and 24 years of age are more likely to commit suicide than their counterparts aged 15 through 19, but the gap between these two groups is narrowing. In general, suicides have decreased among older youth and increased among the younger cohort.[35]

Both white and black young women have relatively low suicide rates (4.7 and 2.3 respectively in 1987), although young women attempt suicide unsuccessfully approximately three times more often than young men.[35] As is the case with homicides, 60 percent of suicides among adolescents and young adults are committed with firearms.

Tobacco, Alcohol, and Drugs

Many of the most important risk factors for chronic disease in later years also have their roots in youthful behavior. The earlier cigarette smoking begins, for example, the less likely the smoker is to quit. Three-fourths of high school seniors who smoke report that they smoked their first cigarette by grade 9. Young people, especially teenage girls, are taking up smoking at younger ages. The age of initiation for regular smoking among females is now roughly the same as for males.[57]

In 1976, about 29 percent of high school seniors reported daily smoking. Between 1977 and 1981, the rate of smoking dropped to 19 percent and has since leveled off. The annual surveys of high school seniors do not gather information on school dropouts—about 15 percent of white youths and 23 percent of black youths[9]—among whom smoking is more prevalent.[61] But data for young adults aged 20 through 24 have shown a continued steady decline in cigarette smoking for young men and a recent equivalent decline for young women.

The use of snuff and chewing tobacco has increased dramatically in recent years among teenage boys. Between 1970 and 1986, snuff use increased fifteen-fold and chewing tobacco use increased fourfold among young men aged 17 through 19. In 1987, the prevalence of smokeless tobacco use among young men aged 18 through 24 was nearly 9 percent. Among younger adolescent boys aged 12 through 17, nearly 7 percent had used some form of smokeless tobacco within the last month.[65]

Alcohol consumption among teenagers and young adults is declining slowly, but it remains a major problem for both. It is a particular problem among school dropouts. Alcohol is a major contributor to both motor vehicle crashes and violence, two of the leading causes of death and disability among young people. In 1989, about 60 percent of high school seniors reported drinking alcohol in the previous month, while 33 percent reported occasions of heavy drinking—having five or more drinks on one occasion in the last 2 weeks; both figures represented slight declines from 1988 survey results.[49]

Alcohol use is also prevalent both among younger teenagers and those who are beyond high school age. In a 1987 national survey, 28 percent of 8th graders and 38 percent of 10th graders reported occasions of heavy drinking.[5] Among young people aged 18 to 24, drinking is more prevalent than in any other age group. In 1988, more than 65 percent of this group reported alcohol use during the past month.[38]

The use of illicit drugs among adolescents has been declining since the late 1970s, at least among young people who remain in school.[51] The number of high school seniors reporting illicit drug use reached a record low of about 20 percent in 1989, indicating a 50 percent drop in drug use over the last decade. Marijuana use, which peaked in 1978 at 37 percent, was down to 17 percent at the close of the 1980s. Only 3 percent of the class of 1989 reported using cocaine at least once in the last 30 days, a significant decline from the 1985 peak of 6.7 percent. Use of crack cocaine declined slightly, from 1.6 percent of high school seniors in 1988 to 1.4 percent in 1989. A more dramatic drop occurred the previous year, however, when the percentage of seniors who reported having ever used crack declined by 20 percent.[49]

Experimentation with illicit drugs often starts early. For example, in a 1987 survey of 8th and 10th graders, 6 and 10 percent, respectively, reported using marijuana in the preceding month. Slightly smaller percentages reported trying cocaine, and about a third of these had tried crack. Students' attitudes toward drugs, as toward alcohol, underwent a change during the 1980s.[5]

Sexual Behavior

An estimated 78 percent of adolescent girls and 86 percent of adolescent boys have engaged in sexual intercourse by age 20.[53,69] The risks of early sexual activity include not only unwanted pregnancy, but also infection by sexually transmitted diseases. Of the approximately 1.1 million girls aged 15 through 19 who become pregnant each year, an estimated 84 percent did not intend pregnancies. Many of these young women face serious health and psychosocial risks. Teenage mothers are more likely than others not to finish school, to be unemployed, to have low-birth-weight babies, and to lack parental skills.[23,29]

Clearly for young adolescents the most effective means of preventing possible physical and psychosocial problems related to sexual intercourse is to delay sexual activity. But, teenage sexual activity is a complex issue, embedded in family, social, and economic factors. Interventions to prevent associated negative health outcomes must address those factors if they are to succeed. For example, it has become clear to many that such interventions cannot be successful without the full support and involvement of parents and others who serve in advisory and role-model capacities with teenagers.

Lifelong Health Habits

It is important for adolescents and young adults to lay the foundation for chronic disease prevention by the promotion and maintenance of healthy lifestyles. The adoption of low-fat and low-salt dietary patterns are important for many people in the prevention of coronary heart disease and high blood pressure, and certain cancers. Further, the adoption of dietary and physical activity habits that will reduce the onset of obesity will help reduce the likelihood of coronary heart disease, diabetes, and high blood pressure. The case of physical activity is important because as students leave the school setting they lose the physical and social supports and incur time constraints that can result in decreased levels of physical activity. It is especially important for adolescents and young adults to recognize the importance of regular light to moderate physical activity in the prevention of weight gain associated with leaving the high school setting.

Although the 1980s brought some improvements in the health status of adolescents and young adults, many other young people still must confront a constellation of problems, including alcohol and other drug abuse, school failure, delinquency, peer group violence, and unwanted pregnancy. While education about risks to health is important, programs for adolescents and young adults must go beyond education to include in-depth counseling and support. Especially for youth in high-risk environments, comprehensive programs are needed to provide positive alternatives to alcohol and other drug abuse, teenage pregnancy, and lifestyles conducive to violence.

Adults

Perhaps more than any other age group, adults have the opportunity to assume personal responsibility for their health. Many of the leading causes of death for people between the ages of 25 and 65 are preventable, wholly or in part, through changes in lifestyle. Not only can adults change established lifestyles, social norms related to health can be changed as well.

Behavioral changes have saved many adult lives in the past two decades. For example, the declines, by more than 40 percent and 50 percent, respectively, in coronary heart disease and stroke death rates since 1970, are associated with reduced rates of cigarette smoking, lower mean blood cholesterol, and increased control of high blood pressure. In the same period, deaths from motor vehicle crashes declined by almost 30 percent. Lower rates of alcohol use, increased seatbelt use, and changes in speed limits contributed to this reduction. Accompanying these trends were reduced public acceptance of certain risks, such as smoking and drinking and driving.

As deaths from heart disease have declined, cancer has became the leading cause of death for people aged 25 through 64 (Fig. 2.4). These and the other top causes of death between the ages of 25 and 65—unintentional injuries, stroke, and chronic liver disease and cirrhosis—have all been associated with risk factors related to lifestyle.

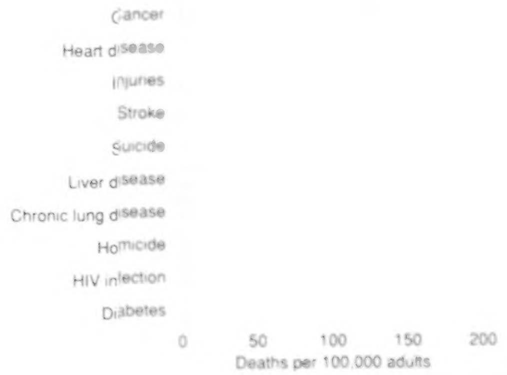

Fig. 2.4

Leading causes of death of adults aged 25 through 64 (1987)

Source: National Center for Health Statistics (CDC)

Cancer

Cancer, which is actually not one but many diseases, is associated with a variety of risk factors. Although cancer mortality rates overall have changed little since 1950, there have been significant changes in mortality for some age groups and cancers. Several prevalent forms of cancer can be either prevented or diagnosed early enough to prevent spread to other organs. It is estimated that 30 percent of cancer deaths are linked to smoking and that another large proportion, perhaps 35 percent, may be associated with diet.[19]

- **Lung cancer** is the most common—and most preventable—cancer in the United States for both men and women, and is increasing as large numbers of smokers grow older. Smoking is responsible for more than 85 percent of all lung cancer deaths. Since 1975, lung cancer incidence has risen more than 15 percent for black men, about 12 percent for black women, 12 percent for white men, and 8 percent for white women.[57]
- **Colorectal cancer** is the second leading cause of death due to cancer. Some studies have suggested that high fat and/or low fiber diets increase the risk of

colorectal cancer. Since 1969, death rates from these cancers have fallen among white men and women, remained about the same for black women, and increased markedly for black men.[36] Although there is no general agreement that screening for colon cancer definitely reduces mortality among those not at high risk, consensus recommendations have suggested screening by digital rectal exams, fecal occult blood testing, and sigmoidoscopy for those over age 50.

- **Breast cancer** has become the second most common cause of cancer deaths among women, having been surpassed by lung cancer in the past decade. However, the incidence of breast cancer is more than twice that of lung cancer in women.[3] Early diagnosis of breast cancer improves the chance of survival significantly, with 90 percent of those diagnosed when the cancer was localized reaching the 5-year survival mark.[67] Breast cancer death rates could be reduced 30 percent with regular screening. Some evidence suggests that high-fat diets may increase the risk of breast cancer.
- **Cervical cancer** can be cured if detected early. Increased use of the Pap test has contributed to a 50-percent drop in cervical cancer deaths among both black and white women since 1969. However, black women continue to have 3 times the cervical cancer death rate of white women. Although the death rates have been decreasing, the *in situ* rates have risen in younger women aged 15 through 19.[3]
- **Oropharyngeal cancer**—cancer of the mouth and throat—accounts for 13.2 per 100,000 in 1987. Increased risk has been linked both to use of tobacco products and to heavy alcohol use.[70]

Heart Disease and Stroke

Despite a recent decline, coronary heart disease still kills more than 500,000 Americans annually. Another 1,250,000 people suffer nonfatal heart attacks each year.[46] About 20 percent of those who die from heart attacks are between the ages of 25 and 65, and most are between 55 and 64.[38] Quitting smoking, reducing dietary fat (especially saturated fat), and controlling high blood pressure can reduce the risk of heart disease.

Approximately 13 percent of the nearly 150,000 Americans who died of stroke in 1986 were between the ages of 25 and 64, and the majority of these were aged 55 through 64. Black men have the highest rate of stroke among all population groups, with a death rate from stroke about twice that of white men and a substantially higher rate than for black women. A much smaller gap exists between the stroke death rates of white men and white women.[38]

High blood pressure is a well-defined risk factor for both heart disease and stroke among adults. Approximately half of all heart attack victims and two-thirds of all stroke victims have high blood pressure.[46] About 30 percent of adults have high blood pressure (over 140/90 mm Hg or taking high blood pressure medication), but most do not have it under control.[43] It is estimated that, during 1982-84, only about 24 percent of hypertensive adults between 20 and 75 had achieved blood pressure control for 2 or more years.[46] Weight control, physical activity, lower intake of alcohol and sodium, and if necessary, medication are means of controlling blood pressure.[45]

Health Habits

Several major health risk factors, sometimes alone and sometimes in combination, are associated with the 5 major causes of death in the United States: cancer, heart disease, stroke, injury, and chronic lung disease. Reducing these risks has already significantly reduced the number of years of life lost before age 65, and greater reductions are possible.

Certain eating patterns—especially excessive consumption of fats—are linked to a higher risk of heart disease, breast and colon cancer, and gallbladder disease.[63] Total dietary fat, including saturated and unsaturated fats, now accounts for more than 36 percent of the total calories consumed in the United States. A fat intake of no more than 30 percent of calories is recommended by most groups, including the American Heart Association, the American Cancer Society, and the United States Departments of Agriculture and Health and Human Services.[63] These groups recommend that the major reduction in dietary fat come from saturated fats, which are common in foods from animal sources, such as meats and dairy products.

Overweight is a problem for about one-quarter of American adults, affecting about 27 percent of women and 24 percent of men.[41] This problem is associated with high blood pressure, elevated blood cholesterol, diabetes, heart disease, stroke, some cancers, and gall bladder disease. It also may be a factor in osteoarthritis of the weight-bearing joints.

Socioeconomic status has been linked to overweight. One national survey found that 37 percent of women below the poverty level were overweight, compared with 25 percent of those above the poverty level. Overweight is especially prevalent among members of some minority groups.[41]

To reduce this risk factor, both exercise and diet are important. As of 1985, however, only about 25 percent of overweight men and 30 percent of overweight women, among people 18 and over, were combining regular physical activity with sound dietary practices to lose weight.[66] Fewer than half of adult Americans exercise regularly (3 or more days a week, sustained for at least 20 minutes each time regardless of intensity)[7], a matter of concern because a sedentary lifestyle appears to be an independent risk factor for coronary heart disease. Older adults are less likely to be physically active than younger adults. Research increasingly suggests that even moderate physical activity can decrease the risk of coronary heart disease, especially among the sedentary. Regular physical activity can also help to prevent and manage hypertension, diabetes, osteoporosis, and obesity.[10] Further, it may play a role in mental health, having a favorable effect on mood, depression, anxiety, and self-esteem.

Cigarette smoking is an important risk factor for heart disease, stroke, and some forms of cancer. In 1965, 40 percent of all Americans smoked cigarettes. Today, that figure is below 30 percent. This dramatic decline is credited with saving nearly 800,000 lives between 1964 and 1985, with an average gain in life expectancy of 21 years for each death avoided or postponed. Despite these gains, smoking is still responsible for one of every six deaths in the United States. Moreover, it is still placing certain groups at greater risk of disease than others, and it is still the single most important preventable cause of death in our society.[57]

More than 50 million Americans still smoke. In 1987, 29 percent of adults aged 20 years and older smoked cigarettes. Almost as many have quit. By 1987, nearly half of those who ever smoked cigarettes (45 percent) had stopped. Since 1974, the rate of change for quitting has been similar for blacks and whites and for men and women.[60] Though more men smoke than women, the gender gap is decreasing. Prevalence of cigarette smoking has declined sharply among men since 1965 (from 50 to 32 percent) but only slightly among women (32 to 27 percent). In general, smoking rates are higher among blacks, Hispanics, blue-collar workers, and people with fewer years of education.[22]

Alcohol is a major factor in thousands of preventable deaths, including motor vehicle fatalities, homicides and suicides, cirrhosis of the liver, and some cancers, such as esophageal and liver cancer. Alcohol is also the leading preventable cause of birth defects.

There is evidence that the use of alcohol is beginning to decline. Based on alcoholic beverage sales and tax data, the consumption of hard liquor declined 21 percent between 1978 and 1986. Wine sales increased and beer sales remained about the same. While the overall trend in the consumption of alcoholic beverages is down, it is estimated that about 9 percent of people aged 21 and older consume more than two drinks daily.[50]

Increasing public concern about alcohol and other drugs, evident in many opinion polls, has helped galvanize organized action on the part of parent groups, government agencies, community groups, schools, and businesses.[6] Drinking and driving has been the focus of much of the attention: the Surgeon General has called for stricter regulation of advertising for alcoholic beverages; citizen groups have lobbied for and legislators have passed laws raising the drinking age and establishing stiff penalties for driving while intoxicated; the news media have devoted much coverage to the problem, and even the entertainment media have incorporated messages about drinking and driving into television programs.[56]

This widespread public concern and the programs that accompany it have had an impact. The proportion of motor vehicle deaths related to alcohol dropped by 10 to 15 percent between 1982 and 1986.[38] More recently, however, the decline has slowed, indicating the need for continued efforts.

Hospital emergency room visits related to use of illicit drugs, one indication of the health impact of drug abuse, rose sharply in the 1980s, and this high rate is expected to continue for some years. Cocaine is responsible for many of these visits. In 1987, cocaine-related emergency room visits constituted 32 percent of all visits related to drugs.[20] Other data indicate that young men between the ages of 25 and 44 are at a higher risk than the total population of being killed or injured by illicit drugs. In addition, drugs are implicated in about 10 percent of all homicides, many of which occur in this age group.

Seatbelt use is an important health habit, saving an estimated 4,000 lives in 1987, a year in which only about 42 percent of motor vehicle passengers used their seatbelts. Most of the crashes in which lives were saved by seatbelts occurred in States with mandatory seatbelt laws.[39] Passage of such laws in other States should increase usage and save many more lives. In addition, beginning with 1990 models, automobile manufacturers are equipping all passenger vehicles with automatic crash protection—automatic belts or airbags—in response to a new Federal requirement. Automatic belts are expected to increase overall usage to about 85 percent.[39]

Health Services

Preventing chronic disease depends often on individual decisions—to quit smoking, to drink in moderation if at all, to consume less saturated fat, to increase physical activity. What then is the role of health services?

One answer is patient education and counseling. Clinical studies have demonstrated that counseling by health professionals is effective in helping people change dietary and smoking behaviors. The U.S. Preventive Services Task Force, in surveying the effectiveness of 169 clinical interventions to prevent disease, concluded that counseling may be even more valuable overall than conventional clinical activities to prevent disease, such as many screening tests.[74]

Screening can be extremely important, when tailored appropriately to an individual's age and risk. Early diagnosis of disease can have a significant impact on mortality rates, as shown by the results of screening for high blood pressure and high blood cholesterol. The means are also available to detect various cancers when they are still curable, such as the Pap test for cervical cancer, mammography and physical examination for breast cancer, fecal occult blood testing and sigmoidoscopy for colorectal cancer, and skin examination for skin cancer. In 1987, just 75 percent of women aged 18 and over had received a

Pap test in the preceding one to three years, and this was by far the highest proportion of adults screened for any type of cancer.[37]

Only about 25 percent of women aged 50 and older surveyed in 1987, had received a mammogram and clinical breast exam in the preceding two years. The percentage of adults aged 50 and older who received a digital rectal exam and fecal occult blood testing in the preceding two years was estimated at 27 percent.[37]

Increasing awareness about preventive services by both health professionals and the public is essential to increasing their use. More and better insurance coverage for screening and counseling would also encourage wider use of these services. Expansion of managed care systems such as health maintenance organizations (HMOs) and preferred provider organizations (PPOs) can also provide basic preventive services to more people.

The challenge facing adults as individuals is to modify their lifestyles to maintain health and prevent disease. But even in adulthood, individual decisions are subject to many forces. Lifestyles once established are difficult to change, addictions even more difficult. Resolution of many of these difficulties is compounded by factors beyond the control of individuals. Socioeconomic status, the environment, community norms, media images and coverage, advertising, worksite standards, access to health care and counseling are powerful influences on adult behavior. So the other challenge facing adults, as members of society, is to work together to create an environment that facilitates and supports healthful behavior.

Many sectors of society have made a beginning. Some employers support smoking cessation, stress management, nutrition and exercise, screening for high blood pressure and high blood cholesterol, and other health-related programs. Hospitals provide patient education services and community health promotion programs. Community groups and churches sponsor classes and support groups. State agencies have initiated community-based prevention programs in many areas. In particular, minority communities, rural communities, and people with low incomes need relevant information and programs that address their particular risks and their need for preventive services.

Older Adults

In 1900, people over 65 constituted 4 percent of the population. By 1988, that proportion was up to 12.4 percent, by 2000 it will be 13 percent and by 2030, 22 percent. The most rapid population increase over the next decade will be among those over 85 years of age.[28]

People who reach the age of 65 can now expect to live into their eighties.[38] However, it is likely that not all those years will be active and independent ones. Thus, improving the functional independence, not just the length, of later life is an important element in promoting the health of this age group.

One measure of health that considers quality as well as length of life is the years of healthy life. While people aged 65 and older have 16.4 years of life remaining on average, they have about 12 years of healthy life remaining[21,38] (Fig. 2.5). Another indicator of quality of life is an individual's ability to perform activities required for daily living, such as bathing, dressing, and eating. Difficulty in performing these necessary tasks leads to the need for assistance and often limits opportunity for remaining independent in the community. People aged 85 and older constitute a substantial share of all people who are not independent in physical functioning.

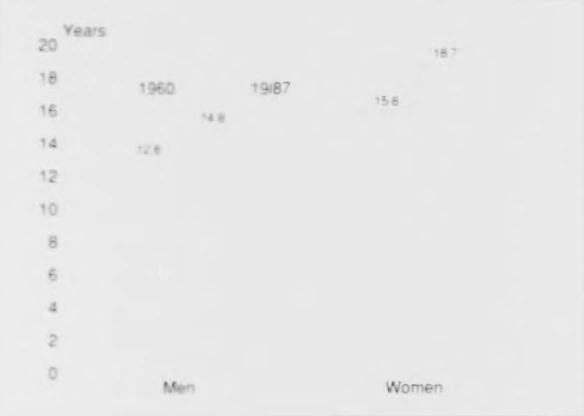

Fig. 2.5

Life expectancy at age 65 by gender

Source: *Health, United States, 1989 and Prevention Profile*

While many people think of health problems in old age as inevitable, a substantial number are either preventable or can be controlled. The major causes of death among people aged 65 and older are heart disease, cancer, stroke, chronic obstructive pulmonary disease, pneumonia, and influenza. Chronic problems, such as arthritis, osteoporosis, incontinence, visual and hearing impairments, and dementia, are of equal concern because of their significant impact on day-to-day living. To accommodate the changing needs of an increasingly older society, we must prevent the ill from being disabled and help people with disabilities preserve function and prevent further disability.[26]

A growing body of evidence shows that changing certain health behaviors, even in old age, can benefit health and quality of life. Cigarette smoking is one of these habits. Studies have shown that when older smokers quit, they increase their life expectancy, reduce their risk of heart disease, and improve respiratory function and circulation.[57] Good nutrition is also important in the promotion and maintenance of health for older adults. Diet can play an important role in mitigating existing health problems with older people. Reducing sodium intake and losing weight, for example, can help keep blood pressure under control, and there is growing evidence that nutrition counseling and food programs can reduce the risk of disease among older adults.[28]

Physical Activity

A key ingredient to healthy aging is physical activity. Often physiological decline associated with aging may actually be the result of inactivity. Over 40 percent of people over age 65 report no leisure time physical activity.[7] Less than a third participate in regular moderate physical activity, such as walking and gardening, on a regular basis, and less than 10 percent engage routinely in vigorous physical activity. Yet regular physical activity and exercise are critical elements of health promotion for older adults. Increased levels of physical activity are associated with a reduced incidence of coronary heart disease, hypertension, noninsulin-dependent diabetes mellitus, colon cancer, and depression and anxiety which are diseases prominent in older adult populations.[10]

Moreover, increased physical activity increases bone mineral content, reduces the risk for osteoporotic fractures, helps maintain appropriate body weight, and increases longevity. It may also be that increased physical activity levels can improve balance, coordination, and strength, factors that may reduce the likelihood of falls in the older adult. Recent studies of exercise training among this age group have shown that older persons can adapt to increased levels of exercise with positive health benefits resulting from both high and low intensity exercise. In addition to these health benefits, a more important result of regular physical activity appears to be the maintenance of functional independence throughout the later years of life.

Health Services

People over age 65 need regular primary health care services to help them maintain their health and prevent disabling and life-threatening diseases and conditions. Clinical preventive services include the control of high blood pressure, screening for cancers, immunization against pneumonia and influenza, counseling to promote healthy behaviors, and therapies to help manage chronic conditions such as arthritis, osteoporosis, and incontinence. For example, skin cancer screening can detect the majority of malignant melanomas and basal cell carcinomas.

Especially important among these clinical services are those to detect breast cancer: screening mammography and clinical breast examination. These screening interventions are estimated to reduce mortality from breast cancer in women over age 50 by about 30 percent.[67] In addition, Pap tests to detect cervical cancer are important for older as well as for younger women.

Because pneumococcal disease is 3 times more prevalent among those over 65 than among younger people and takes many older lives, immunization of older adults is an important preventive service. Pneumonia was responsible for an average 48 days of restricted activity per 100 people aged 65 and older in 1987.[42] Likewise, immunization against influenza is recognized now as a basic preventive intervention for older adults. During 6 flu epidemics from 1972 to 1982, the death rate was 34 to 104 times higher in this age group than in younger people. Only about 10 percent of older adults living in the community receive pneumococcal vaccine and 20 percent receive influenza vaccines.[13]

The number of medicines prescribed to persons over the age of 65 increases the risk of adverse drug reactions, drug interactions, and other health problems associated with the use and misuse of medications. The risk of adverse reactions may be exacerbated by the physiological changes associated with aging. For example, decreased kidney and liver function can change the way the body processes medications. In some cases, the adverse effects of medication can be prevented by using a different drug or lower dose. Physicians, nurses, pharmacists and other health professionals can help reduce this risk through careful reviews of medication use and patient counseling.

Primary health care providers are necessary partners in the maintenance of good health and functional independence for older adults. In addition to ensuring appropriate screening, counseling, and immunization, they can monitor health status to detect early signs of other health problems that can threaten independence such as dementia or depression, as well as ensure an accurate distinction between the two in diagnosis. Alzheimer's disease is the best known and leading cause of cognitive impairment in older adults, but there are other, more treatable forms of dementia, characterized by deterioration of memory, orientation, general intellect, specific cognitive capacities, and social functioning. The prevalence of dementia ranges from about 5 to 10 percent of people over age 65, to 20 to 40 percent of those who have reached age 80. While most cases are not treatable, 10 to 20 percent of them—those caused by drug toxicity, metabolic disorders, depression, or hyperthyroidism—may be reversible.[16,34]

Providers can play an important role in identifying patients at risk for conditions for which interventions may be appropriate, e.g., counseling women at high risk for osteoporosis about the benefits and risks of estrogen replacement therapy. Urinary incontinence is another condition that can have serious consequences for functional independence. It affects many noninstitutionalized older adults and about half of all nursing home residents.[52] The risk of incontinence increases with age but it often is a sign of other problems. Various treatments are available, including pelvic muscle exercises and other behavioral treatments, drug therapy, and surgery. A major impediment is that only about half the people with incontinence report it to their physicians. Increased awareness of available treatments could reduce this often incapacitating problem.

Social Networks

Social isolation is both a risk factor for disease and a measure of reduced functional independence. Social support networks are of critical importance in promoting the health and independence of older adults.[28] Life changes common to the seventh and eighth decades can increase the risk of social isolation. Retirement and changes in social roles can affect systems of contact and support, as can the loss of spouses and close friends.

Depression, a frequent outcome of such changes, is of particular concern among older adults because of its impact on functional independence and its importance as a risk factor for suicide. Men aged 65 through 74 have the highest suicide rate in the United States.[12] Depression is treatable but often goes unsuspected by families and undiagnosed by physicians, perhaps because it is often only one of several health problems besetting an older adult. However, primary care providers who recognize the clinical signs and risk factors for depression—bereavement, loneliness, and low self-esteem—can help reduce suicide among older adults. Illness and disrupted marital status have also been linked to suicide in this age group.

Community support networks that provide services to help older adults maintain independence are also critical interventions for reducing social isolation. Primary care providers can also play a critical role, not only in the identification of individuals at risk, but also by supplying information and referral to available services.

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3. The Nation's Health: Special Populations

Progress toward a healthier America will depend substantially on improvements for certain populations that are at especially high risk. For that reason, *Healthy People 2000* sets specific targets to narrow the gap between the total population and those population groups that now experience above average incidences of death, disease, and disability. These population groups include people with low incomes, people who are members of some racial and ethnic minority groups, and people with disabilities. Likewise, it sets specific targets for controlling some of the risk factors that contribute to the disease burden of groups at highest risk. Special population groups often need targeted preventive efforts, and such efforts require understanding the needs and the particular disparities experienced by these groups. General solutions cannot always be used to solve specific problems.

This section provides profiles of the at-risk population groups addressed by *Healthy People 2000*: low-income groups, minority groups, and people with disabilities. At the outset, it is necessary to point to two caveats that limit these profiles and pose major health challenges in themselves.

First, data are limited; sometimes, and for some groups, the data may be severely limited. Without data, targets cannot be set, even though professional consensus exists that a population group is at considerably higher risk than the total population. A challenge of the coming years is to build better data systems, at national and State levels, in order that the scope of health threats facing various groups within our society can be adequately defined and appropriate preventive interventions can be effectively focused.

Second, the special populations themselves are extremely heterogenous. Whether the group is defined as low income, black, Hispanic, Asian and Pacific Islander Americans, American Indians and Alaska Natives, or people with disabilities, the variations within each group are extensive. Generalizations, which characterize population profiles by definition, are dangerous because the exceptions are many. The challenge is to refine our knowledge and our understanding even further, especially as basic health policies are translated into community-based prevention programs and clinical preventive services.

With these two caveats in mind, profiles of special populations can be used, together with those in the preceding section that address age groups, to provide the human context for the health strategy laid out in this report.

People with Low Income

Nearly 1 of every 8 Americans lives in a family with an income below the Federal poverty level. Nearly a quarter of children younger than 6 are members of such families.[11] Low income itself (or low socioeconomic status) is a shorthand label that encompasses family groups with individuals who have poorly paid jobs or are unemployed, families living in substandard housing, and families more likely to have only a single parent in residence. Health disparities between poor people and those with higher incomes are almost universal for all dimensions of health. Those disparities may be summarized by the finding that people with low income have death rates that are twice the rates for people with incomes above the poverty level.[1]

For virtually all of the chronic diseases that lead the Nation's list of killers, low income is a special risk factor. For example, the risk of death from heart disease is more than 25 percent higher for low income people than for the overall population.[16] The incidence of cancer increases as family income decreases, and survival rates are lower for low-income cancer patients. The association of cancer and low income varies by cancer site; lung, esophageal, oral, stomach, cervical, and prostate cancers are more frequent among the poor, while breast and colorectal cancers are not.[1,30] Infectious diseases, like HIV infection and tuberculosis, are also often found disproportionately among the poor.

Similar vulnerability for low income people is found with some causes of traumatic injury and death. These individuals, more than those with higher incomes, are the victims of violent crime. Poverty appears to be a major predisposing factor associated with a higher risk for murder of acquaintances and family members, as well as robbery-motivated killings of strangers. Injuries and deaths among children from fires, drowning, and suffocation are strongly related to low socioeconomic status.[11]

No single indicator of health status makes the connection between poverty and poor health more clear than does infant mortality. Poor pregnancy outcomes including prematurity, low birth weight, birth defects, and infant death are linked to low income, low educational level, low occupational status, and other indicators of social and economic disadvantage.[8]

Poverty reduces a person's prospects for long life by increasing the chances of infant death, chronic disease, and traumatic death; poverty is also often associated with significant developmental limitations. For example, iron deficiency is more than twice as common in low income children, aged 1 and 2, as it is among the total population of that age.[14] Growth retardation affects 16 percent of low income children younger than age 6. In the mid-1980s, an estimated 3 million children, virtually all of them from low income families, had blood lead levels that exceeded 15 μg/dL, sufficient to place them at risk for impaired mental and physical development. The rate of mental retardation is reported to be higher among children in poverty. Poor children experience more sickness from infection and other debilitating conditions than the total population. Children in families with incomes below $5,000 per year had an average of 9.1 disability days in 1980 compared to only 4 days for children in families with incomes of $25,000 or more.[15]

The pattern of increased vulnerability to injury, disease, and death continues into adulthood. People in families with incomes of less than $13,000 a year are twice as likely as the total population to be limited in major activities because of their health (Fig. 3.1). Activity limitations are four times more common among people with 8 years or less of education than among those with 16 years or more. Bed disability days increase as income decreases.[17]

Just as poor health is more likely among persons of low income, so are some, but not all, of the major risk factors for poor health. Higher-than-average rates of obesity and high

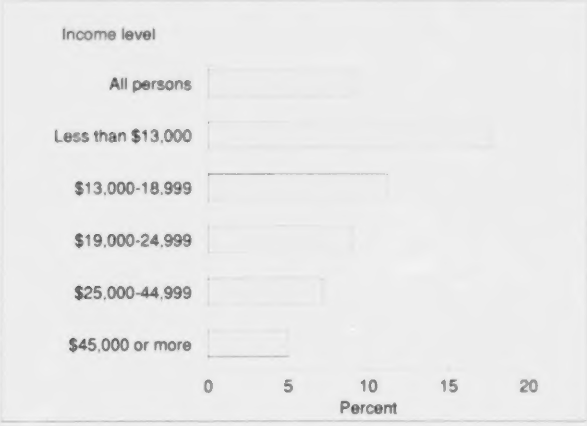

Fig. 3.1

Percentage of people who experience limitation of major activity, by income level (1988, age-adjusted)

Source: National Health Interview Survey (CDC)

blood pressure, which are major risks for heart disease and stroke, have been linked directly with low income status.[23] Tobacco use, which has declined dramatically in the past two decades for the population as a whole, has remained virtually constant since 1966 for those who completed less than 12 years of schooling. Smoking levels among blue-collar workers are about 20 percent higher than among others.[21]

Whereas in 1986 over 15 percent of people under age 65 had no health insurance either by private or public forms of coverage, lack of health insurance coverage was a problem for 37 percent of families with incomes below $10,000 a year.[12]

In 1987 only 22 percent of low-income women over age 40 had ever received a clinical breast examination and a mammogram, as compared to 36 percent of women in the total population.[15] Relatively low survival rates for breast cancer among low-income women point to the need for earlier diagnosis and treatment. While the benefits of prenatal care for low-income women are well documented, with a savings-cost ratio on the order of 3-to-1, low utilization rates are characteristic of groups at high risk of low birth weight and other maternal and infant health problems.[8] Approximately 40 percent of children from low-income families have untreated dental caries, another indicator of the lack of preventive and primary health care.[20]

For the coming decade, perhaps no challenge is more compelling than that of equity. The disparities experienced by people who are born and live their lives at the lowest income levels define the dimensions of that challenge. The relationships between poverty and health are complex and cannot be reduced to a simple one-to-one relationship between dollars available and level of health. Low income may, in fact, be a product of poor health, just as poor health may be caused by environmental exposures, material deficiencies, and lack of access to health services that adequate income might correct or improve. While, from a public health perspective, the leverage available to effect improvements is limited largely to the availability and the quality of health services, improvements in education, job training, and other social services are necessary to erase the health effects of current income disparities.

People in Minority Groups

The United States has been called a "melting pot" of ethnic and racial groups. In recent decades, it has become clearer that the image is no longer an appropriate one. Rather than amalgamating into one single group, we have come to recognize and even celebrate our diversity as a basis for national strength. Nevertheless, our health care programs are characterized by unacceptable disparities linked to membership in certain racial and ethnic groups.

The predominant minority populations of the United States can be categorized as blacks, Hispanics, Asian and Pacific Islander Americans, and American Indians and Alaska Natives. From a total population perspective, the categories simplify the difficulties of assessing health status and making plans to improve health. But they are gross simplifications. Within each racial or ethnic category, significant subgroup differences exist. Demarcations among minority populations are not absolute. For example, there are both black and nonblack Hispanics. Many nonblack Hispanics share historic roots and genetic endowments that are closely related to those of many American Indian groups, while others have European roots and do not share the genetic make-up which may predispose to adult-onset diabetes. Alaska Natives may have more in common with some Asians than they do with American Indians in the lower 48 States. In short, differences within the principal population groups must always temper generalizations about their health needs.

The extent of disparities suffered by minority groups in America was documented in the mid-1980s by the *Report of the Secretary's Task Force on Black and Minority Health*.[30] This report found that black Americans suffered nearly 60,000 excess deaths per year in the period 1979-1980, with "excess deaths" defined as the difference between the number of deaths observed in that minority population and the number of deaths that would have been expected if that population had the same age- and gender-specific death rate as the white population.

A compelling disparity of most minority populations in the United States is socioeconomic. The discussion on low-income people describes a small portion of the white American population. It applies to much larger portions of those from black, Hispanic, Asian and Pacific Islander, and American Indian and Alaska Native communities. Poverty and near-poverty appear as underlying elements of many health problems experienced by these groups. But if the socioeconomic effects are set aside, disparities experienced by these population groups will still be observed. Simply put, some differences in survival and health are not solely explained by poverty or other environmental factors.[4] For that reason, *Healthy People 2000* assesses disparities not only in terms of income level and educational attainment, but also in terms of the Nation's racial and ethnic population groups. Special population targets for improvements to be achieved by 2000 are set for those groups with higher risks than the total population, where data are available to establish such targets.

Black Americans

African Americans make up 12 percent of the United States population, thereby constituting the Nation's largest minority group. Members of this group live in all regions of the country and are represented in every socioeconomic group. One-third of blacks live in poverty, a rate three times that of the white population. Over half live in central cities, in areas often typified by poverty, poor schools, crowded housing, unemployment, exposure to a pervasive drug culture and periodic street violence, and generally high levels of stress. Life expectancy for blacks has lagged behind that for the total population throughout this century; since the mid-1980s the gap has actually widened, with the life expectancy rising to 75 years for the overall population while falling slightly for blacks, from a high of 69.7 years in 1984 to 69.4 years in 1987.[3] The leading chronic diseases as causes of death for black Americans are the same as those for the majority population (Fig. 3.2). However, black men die from strokes at almost twice the rate of men in the total population, and their risk of nonfatal stroke is also higher. Coronary heart disease death rates do not show such disparate levels, although death rates are higher for black women than for white women. On the other hand, when heart disease rates are compared within income levels, black rates are lower than those for whites.[30]

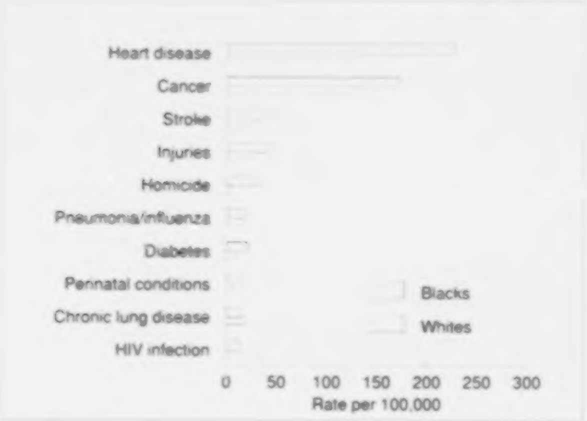

Fig. 3.2

Leading causes of death for blacks compared to whites (1987, age-adjusted rates)

Source: National Center for Health Statistics (CDC)

Black men also experience a higher risk of cancer than nonblack men, with a 25-percent higher risk of all cancers and a 45-percent higher incidence of lung cancer. Only 38 percent of blacks with cancer survive 5 years after diagnosis, compared to 50 percent of whites.[30]

Diabetes is 33 percent more common among blacks than whites. The highest rates are among black women, especially those who are overweight. The complications of diabetes—heart disease, stroke, kidney failure, and blindness—all are more prevalent among blacks with diabetes than whites with diabetes.[30]

Black babies are twice as likely as white babies to die before their first birthday. High rates of low birth weight among black babies account for many of these deaths, but even normal-weight black babies have a greater risk of death. Black infant mortality rates are higher not only for babies in the first month of life, but also for those between 1 month and 1 year of age. The major killer in this period is sudden infant death syndrome (SIDS). Other causes of death that are more prevalent for black infants than for the total population include respiratory distress syndrome, infections, and injuries.[19]

Homicide is the most frequent cause of death for black men between the ages of 15 and 34. The homicide rate for those between ages 25 and 34 is 7 times that of whites. A black man has a 1-in-21 lifetime chance of being murdered, and black women are more than four times as likely to be homicide victims as white women.[30] Most young black murder victims are killed with firearms in the course of an argument. It is estimated that about half of all homicides in the United States are related to alcohol use and 10 percent or more to the use of illegal drugs.

The rate of AIDS among blacks is more than triple that of whites. Among women and children, the gaps are even wider. Black women face between 10 and 15 times the risk of AIDS as compared to white women. Black children account for more than 50 percent of all children with AIDS. The proportion of AIDS cases associated with intravenous drug abuse is greater for blacks than for other AIDS victims, and higher rates of heterosexual transmission of the HIV virus and transmission of the virus from mother to infant occur as a consequence.[26]

Disparities in the experience of health risks mirror some of the most striking disparities in health outcomes. High blood pressure is much more common among blacks of both genders than among the total population. Severe high blood pressure is present 4 times more often among black men than among white men.[29] Overweight is a problem for 44 percent of black women aged 20 and older, compared to 37 percent for low income women and 27 percent for all women. Poor nutrition, smoking, alcohol and drug abuse, and other risk factors appear more commonly among blacks with low incomes.[30]

Adolescent pregnancy is a major concern among the black population, for its social and economic consequences as much as for its health effects. There are higher risks of infant mortality and low birth weight, especially for very young pregnant girls. But even greater risks indirectly threaten the health of both mother and baby because of the patterns of poverty and low educational attainment that often become solidified as a result of early childbearing. Actual rates of childbirth among black teenagers have dropped since the 1960s, but because the number of girls in this population has risen by 20 percent, the total number of births has increased. In 1987, births among girls aged 15 through 17 were 3 times as likely among black girls as among white girls. Birth rates among black girls younger than 15 were nearly 5 times higher, than the rate for white girls.[12]

Statistics demonstrate with sharp clarity that blacks do not receive enough early, routine, and preventive health care. Early prenatal care can reduce low birth weight and prevent infant deaths. Early detection of cancers can increase survival rates. Appropriate medical care can reduce the frequency and severity of the complications of diabetes, which blacks experience at higher rates than others. Information about actual use of health care services confirm these indications. Blacks make fewer annual visits to physicians than whites, and black mothers are twice as likely as white mothers to receive no health care or care only in the last trimester of their pregnancies.[30] Hospital emergency rooms and clinics are a much more common source of medical care for blacks than for whites, and 20 percent of blacks compared to 13 percent of whites report no usual source of medical care.[30] Though recent statistics are not available to assess immunization coverage by race, children in central cities—many of whom are black Americans—lagged as much as 20 percent behind immunization rates for children living in other places. In 1986, about 23 percent of blacks had no private or public medical insurance, compared to 14 percent of whites.[12]

Hispanic Americans

The Hispanic subgroups—Mexican Americans, Puerto Ricans, Cuban Americans, Central and South American immigrants, and other Spanish-surname/Spanish-speaking communities—compose the second largest minority group in the United States. At the beginning of the 1990s, they constitute about 8 percent of the total population and are the fastest growing minority group. Over 70 percent of Hispanics were born in this country. Within the Hispanic populations, Mexican Americans are nearly two-thirds of the total, Puerto Ricans (excluding those who live in Puerto Rico) are 12 percent, Cuban Americans are 5 percent, people of Central and South American origin are 11 percent, and others (including Spanish-speaking immigrants from Caribbean islands) make up 9 percent. Eighty-seven percent of Hispanics live in urban areas. The largest concentrations of Mexican Americans are in Western States, notably California and Texas. More Puerto Ricans reside in East Coast States, led by New York. Cuban Americans more often reside in Florida.[13]

Hispanics experience perhaps the most varied set of health issues facing a single minority population. Whereas Mexican Americans have low rates of cerebrovascular disease, stroke rates among New York Puerto Ricans are high. Cuban Americans have high utilization rates for prenatal care, but lower rates prevail among Mexican Americans and Puerto Ricans. Infant mortality rates vary substantially from group to group (Fig. 3.3). In short, the Hispanic health profile is marked by diversity. This diversity is intertwined with the ever-present effects of socioeconomic status, and with geographic and cultural differences.

Two related demographic facts are especially important for the health issues and prospects of the Hispanic population: its youthfulness and its high birth rate. The

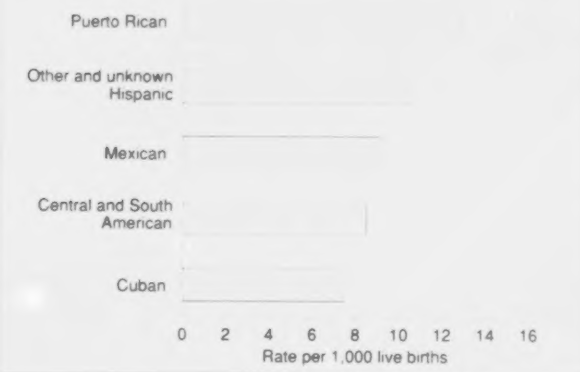

Fig. 3.3
Infant mortality rates for selected Hispanic groups (1983-84)

Source: National Linked Birth and Infant Death Data Set (CDC) median Hispanic age is less than 26, compared to about 33 for the total population. Approximately 38 percent of all Hispanics are aged 19 and younger.[3] The Hispanic birth rate was 22.3 births per 1,000 women in 1987, while that of the total population was 15.7 births per 1,000 women.[19]

The leading causes of death among Hispanic Americans document several differences between their health experience and that of the total population (Fig. 3.4). Heart disease and cancer lead the list, as is the case for other Americans, but death rates from these 2 causes are actually lower than for non-Hispanics. Unintentional injuries, homicide, chronic liver disease and cirrhosis, and AIDS rank higher on the Hispanic list; suicide, stroke, and chronic obstructive pulmonary disease rank lower.[13] In the case of homicide, the great majority of victims are young men. In the southwest, Hispanic men aged 20 through 24 have 4 times the homicide rate of their non-Hispanic, white counterparts.[28] In the case of AIDS, Hispanics' rate is nearly 3 times higher than for non-Hispanic whites, with rates among Puerto Rican-born Hispanics as much as 7 times higher.[27] The cumulative incidence of AIDS among Hispanic women is about 8 times higher than among non-Hispanic women, and the rate for HIV infection over 6 times higher for Hispanic children. As with black Americans, HIV transmission among Hispanic women is primarily linked to intravenous drug abuse by these women or their sexual partners.[27] Diabetes is especially prevalent among Mexican Americans.[13]

Hispanics		*Rank*	*White non-Hispanics*	
Heart disease	25%	1	Heart disease	37%
Cancer	17%	2	Cancer	23%
Injuries	9%	3	Stroke	7%
Stroke	6%	4	Chronic lung disease	4%
Homicide	5%	5	Injuries	4%
Liver disease	3%	6	Pneumonia/ influenza	4%
Pneumonia/ influenza	3%	7	Diabetes	2%
Diabetes	3%	8	Suicide	2%
HIV infection	3%	9	Atherosclerosis	1%
Perinatal conditions	3%	10	Liver disease	1%

Note: National death rate data unavailable for Hispanics.

Fig. 3.4

Leading causes of death for Hispanics and white non-Hispanics in 18 States and the District of Columbia, as a percent of total deaths (1987)

Source: *Monthly Vital Statistics Report*, Supplement, September 26, 1989

Among the risks to health, smoking continues among 43 percent of Hispanic men, and Hispanic teenagers of both genders smoke more than do either non-Hispanic black or non-Hispanic white teenagers. Likewise, Hispanic teenagers report heavy drinking of alcoholic beverages more frequently than do white or black teenagers. Puerto Ricans and Cuban Americans aged 12 through 17 report higher rates of cocaine use than do either whites or blacks, and Mexican Americans have higher rates of marijuana use. Cocaine-related deaths tripled between 1982 and 1984 among Hispanics, while they were doubling among non-Hispanic whites.[13]

Overweight is common among Hispanics, especially among Mexican American women. This disparity cannot be accounted for completely by socioeconomic differences. Likewise, Mexican Americans participating in a San Antonio Heart Study were found to have physical activity rates lower than those in the total population, even after differences in socioeconomic status, residential location, and gender were taken into account.[13]

Like black Americans, Hispanic Americans receive less preventive health care, including prenatal care, than the total population. In 1987, 39 percent of Hispanic mothers had no prenatal care during the first trimester of pregnancy compared to 21 percent of non-Hispanic whites.[12] Barriers to care include language differences between Spanish-speaking patients and English-speaking health professionals, logistical barriers posed by rural residence of some Hispanic families, and costs of services.

Migrant farmworkers, a small but important subset of Hispanic Americans, deserve special attention. Migrant farmworkers may also belong to white, black, Haitian, or other ethnic groups, but the largest group is Hispanic. Their infant mortality rate is about 25 percent greater than that of the national average; their life expectancy is 49 years rather than 75 years; the rate of parasitic infection among some sets of farm workers approaches 50 times that of the total population.[18] The health care needs of these farmworkers are particularly challenging, given their migratory patterns, low incomes, poor education, and lack of health insurance.

Asian and Pacific Islander Americans

The diversity that characterizes the more than 11 million people who are Asian and Pacific Islanders is striking. As a whole, they are the Nation's third largest minority group, but this single label is an oversimplification. They speak over 30 different languages and bring with them a similar number of distinct cultures. Approximately three-quarters of them are immigrants, mostly from Southeast Asia, and many of them are refugees. A small proportion are either immigrants from South Pacific islands or Native Hawaiians.[3]

From the perspective of their health prospects, those born within the United States and established here for generations are virtually undistinguishable from the population as a whole. Indeed, their median income is higher than that of the overall United States population, with Japanese families having annual incomes 38-percent higher than the national median income. Yet, some groups, particularly recent immigrants, are extremely poor. For example, Laotian immigrants have one of the highest poverty rates of any group in the Nation. Even within subgroups, diversity characterizes both socioeconomic and health profiles. While Chinese Americans generally enjoy adequate incomes and relatively good health, communities such as Chinatown in San Francisco have higher poverty levels. Elimination of the disparities between Asian and Pacific Islander Americans and the general population may parallel integration of the newer immigrants into both the economy and the society of the United States.

An adequate depiction of the health of Asian and Pacific Islander Americans is constrained because data cannot be stratified by subgroups. Many national data systems are unable to make estimates of this minority population because of its relatively small size. This prevents accurate assessment of the leading causes of death, disease, and disability that it experiences. From local studies, however, it is possible to recognize certain diseases as posing higher than normal risks for specific Asian and Pacific Islander Americans. Most of the studies are based in California, which has the largest Asian and Pacific Islander American population (Fig. 3.5). Generalizations from local studies may be inaccurate and misleading due to the profound differences among Asian and Pacific Islander American groups, for example the difference in perinatal mortality among the groups (Fig. 3.6).

Disparities in rates of cancer exist for several subgroups and selected cancer sites. For example, the breast cancer incidence rate among Native Hawaiians is 111 per 100,000 women, as compared to 86 per 100,000 among whites.[2] The lung cancer rate is 18 percent higher among Southeast Asian men than for the white population. And the liver cancer rate is more than 12 times higher among Southeast Asians than in the white population.[2,25] Higher rates of high blood pressure have been found among Filipinos aged 50 and older living in California (61 percent for men and 65 percent for women) than among the total California population (47 percent).[30]

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Asians and Pacific Islanders		*Rank*	*Whites*	
Heart disease	28%	1	Heart disease	35%
Cancer	24%	2	Cancer	23%
Stroke	9%	3	Stroke	8%
Injuries	7%	4	Chronic lung disease	5%
Pneumonia/ influenza	4%	5	Pnuemonia/ influenza	4%
Chronic lung disease	3%	6	Injuries	4%
Suicide	2%	7	Suicide	2%
Diabetes	2%	8	Liver disease	2%
Perinatal conditions	2%	9	Diabetes	1%
Liver disease	1%	10	Atherosclerosis	1%

Note: California's published data on the Asian and Pacific Islander population includes 93 percent Asians and 7 percent Other (Native Americans, Eskimos, and Alaskan Aleuts.) National death rate data are unavailable for Asians and Pacific Islanders.

Fig. 3.5

Leading causes of death for Asians and Pacific Islanders and whites in California, as a percent of total deaths (1987)

Source: California State Department of Health and Asian American Health Forum

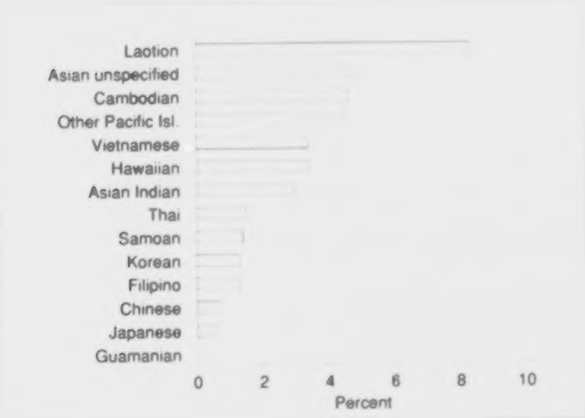

Fig. 3.6

Percent of deaths attributed to conditions originating in the perinatal period, for selected Asian groups

Source: California State Department of Health and Asian American Health Forum

The two infectious diseases that have followed immigrant Asian and Pacific Islander population subgroups to this country are tuberculosis and hepatitis B. Tuberculosis is still the leading cause of death in some Asian countries and has become a serious health problem in some Asian communities in large American cities. Among Southeast Asian immigrants, the incidence is 40 times higher than in the total population. Rates are particularly high among those over age 45.[2] Higher rates of hepatitis B are also found among Asian immigrants. This infection is associated with chronic liver disease, cirrhosis, and liver cancer. The overall carrier rate in the United States is estimated to be 0.3 percent of the population; among immigrants from Southeast Asia the estimated rate is 4 percent. Infection is spread from mother to infant and from child to child. Refugee transit camps now screen pregnant women and vaccinate infants of those who are carriers of hepatitis B and all children under age 6.[5] Among the risk factors of greatest concern is smoking. Among California immigrant groups, smoking rates among men are 92 percent for Laotians, 71 percent for Cambodians, and 65 percent for Vietnamese, compared to 30 percent for the overall American population.[2]

Faced with western medicine and a health care system that is unfamiliar, Americans of Asian and Pacific Island heritage experience unique access barriers to primary care. In addition to linguistic and cultural differences, financial problems beset many subgroups, especially recent immigrants and refugees.

American Indians and Alaska Natives

Descendants of the original residents of North America now number approximately 1.6 million and compose the smallest of the defined minority groups. Diversity characterizes this group, too, encompassing numerous tribes and over 400 federally recognized nations, each with its own traditions and cultural heritage. Eskimos, Aleuts, and Indians residing in Alaska are referred to as Alaska Natives; those residing in other States are referred to as American Indians. The Federal Government collects detailed data on American Indians and Alaska Natives in 33 States that include reservations; health care services are provided through the Indian Health Service to those living in these reservation States. Thus, it is possible to derive a composite profile of this population group. However, only about one-third of this group lives on reservations or historic trust lands, while about 50 percent live in urban centers.

In general, the American Indian and Alaska Native population is youthful. The median age of those living in the reservation States is about 23, compared to over 32 for the United States population as a whole. Income and educational levels tend to be low, with more than 1 in 4 living below the poverty level and fewer than 8 percent having college degrees.[6]

One reason for the youthfulness of the population is the large proportion of the population who die before age 45. Most of the excess deaths—those that would not have occurred if American Indian death rates were comparable to those of the total population—can be traced to 6 causes: unintentional injuries, cirrhosis, homicide, suicide, pneumonia, and complications of diabetes (Fig. 3.7). Heart disease and cancer are not among the sources of excess deaths, perhaps because these are generally diseases of older age. Cancer rates are lower overall, but are twice as high as the total population for lung cancer among Oklahoma Indians. Southwest Indians have high rates of gallbladder cancer, and Alaska Natives suffer high rates of liver cancer.[30]

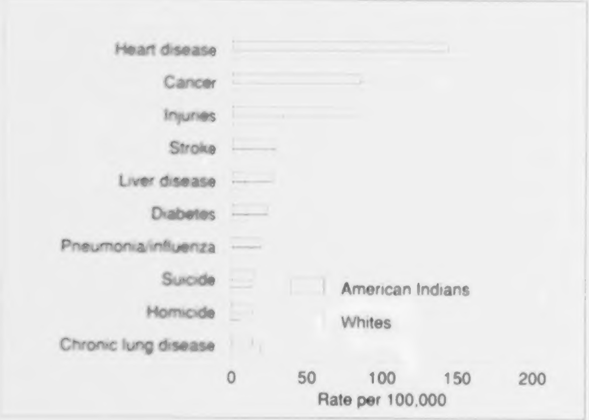

Fig. 3.7

Leading causes of death for American Indians in Reservation States compared to whites (1987, age-adjusted rates)

Source: Indian Health Service and National Center for Health Statistics (CDC)

The second leading cause of death among American Indian men, and the first cause for those younger than age 44, is unintentional injuries, accounting for over one-fifth of all their deaths each year.[19] An estimated 75 percent of these injuries are alcohol-related, and 54 percent involve motor vehicle crashes. Alcohol is also a factor in a homicide rate that is 60 percent higher than that of the total population. Suicide, the third of the four alcohol-related causes of death among American Indians, occurs at an overall rate that is

28 percent higher than the national rate, but among some tribes the suicide rate is 10 times higher than the total population rate.[6]

Cirrhosis and diabetes are the two chronic diseases that afflict American Indians more frequently than other groups. Cirrhosis deaths occur at about three times the total population rate, and cirrhosis is the fourth alcohol-related health effect contributing significantly to death and disability among American Indians.[24] Diabetes is now so prevalent that in many tribes more than 20 percent of the members have this disease.[6] Among two tribes in Arizona, the rate is 40 percent of adults. Obesity contributes to the high incidence of diabetes experienced by many American Indian communities, and it is also linked to hypertension and cardiovascular disease. The increase in obesity among American Indians in the last 50 years has paralleled the increasing rates of diabetes.

Alcohol and obesity are risk factors that stand out as problems for the American Indian population. One estimate is that 95 percent of American Indian families are affected either directly or indirectly by a family member's alcohol abuse.[24] While American Indians living on reservations and tribal members with access to reservation health facilities are served by the Indian Health Service, access to health care is still a problem for many. Many live in rural areas where the availability of physicians is about half that of the national average and where the Indian Health Service may not provide health care services. Health problems may appear especially intractable, but gains achieved among a number of tribes in reducing infant mortality rates to levels below those of the population as a whole provide testimony to the possibility of major improvement in the coming decade.

People With Disabilities

Throughout this document, the preventive actions implicit in targets to be achieved by 2000 seek not only to reduce unnecessary deaths and the immediate suffering and costs of infectious and chronic diseases; they also seek to prevent the longer-term consequences of functional impairments that can severely affect the quality of one's life. As a prevention plan for the 1990s, *Healthy People 2000* addresses not only the prevention of premature death and disease, but also the prevention of disabilities. Even when data are unavailable to define health outcomes except in terms of death, the thrust of objectives for the year 2000 is aimed at the living consequences of unhealthy behaviors, unsafe environments, and illness-causing infections. Disabilities may be defined, as distinct from illness or disease, in terms of limited ability to function. Disabilities may be physical or mental; and they may include motor or sensory limitations. The focus is on effects, rather than causes, since a similar functional limitation, such as a limitation in ability to walk, may be caused by a congenital birth defect, an injury, or a leg amputation resulting from complications of diabetes.

When the focus is on prevention of disabilities, another group of Americans who face special health risks becomes evident: those who already experience serious and chronic disability. The health promotion and disease prevention needs of people with disabilities are not nullified because they were born with an impairing condition or have experienced a disease or injury that has long-term consequences. In fact, those needs for health promotion are accentuated. People with disabilities are at higher risk of future problems that can only increase the limitations that they experience. For that reason, *Healthy People 2000* addresses people with disabilities as a special population, and where data are available, sets specific targets to address their needs and enhance their health.

Secondary conditions—health problems that arise from, or are related to, the main cause of disability—are common among people with disabilities and are the principal targets of health promotion and disease prevention efforts for this special population. Some, such as decubitus ulcers (pressure sores) and genitourinary disorders, are associated with living conditions linked to the disability, i.e., confinement to a wheel chair or bed. Immobility or inactivity also increases the risk of metabolic, circulatory, respiratory, and musculoskeletal problems.[7] Other secondary health problems can be seen as a progression of the original disabling condition. Diabetes, for example, can lead to serious foot problems and vision impairment.

Many secondary health problems are preventable. For others, the risks can be reduced. For example, pressure sores are a major health risk for all people with spinal cord injuries yet can be prevented through improved health care, properly designed seating, and personal hygiene. Remediable genitourinary tract disorders are also a problem for people whose major motor function is severely restricted. Inadequate health care is implicated in the development of these disorders. Other factors include nutritional disorders, alcohol and drug abuse, inadequate personal hygiene, and acute and chronic illness. Cardiovascular disorders and stroke, brought on by hypertension, nutritional problems, smoking, and lack of physical activity, may be particular problems for people with disabilities.[7]

Musculoskeletal disorders caused by a lack of physical activity and injuries are especially prevalent among people with disabilities. Many respiratory problems for people with disabilities are thought to be preventable. They can result from tobacco use, lack of physical activity, and inadequate immunization.

Alcohol and other drug abuse often are associated with emotional problems. For some people with disabilities, special risks may stem from negative family and cultural attitudes.

As with minority populations, the elements of this report that explicitly call for improvements for people with disabilities are limited by the availability of data with which to set targets. Disabilities vary in their type and their intensity; those with disabilities include all age, racial, and ethnic groups. One of the major challenges of the coming years is to improve our understanding of the needs of the full range of people with disabilities by improving the effectiveness of data systems.

Estimates of the number of people with chronic, significant disabilities vary from 34 million to 43 million. These estimates include the almost 4 percent of the total population of the Nation who are unable to perform their major activity (play, school, work, self-care); about 6 percent whose ability to perform major activities is limited in some fashion; and over 4 percent who are limited in nonmajor activities.[9] Many more people, of course, have impairments that are not yet, but could become, disabling; and still more have chronic conditions, such as hypertension or alcoholism, that can lead to impairment and disability. Many people have several disabling conditions. About 27 percent of people with disabilities report more than one cause of their limited function and over 7 percent report three or more.[9]

Activity limitations are most common among older people, the poor, and those Americans who are less educated. In comparison to the total population, about twice as many people in families with incomes of less than $10,000 a year report major activity limitation. Education too is clearly linked to disability; about 40 percent of people with 8 years or less of education have activity limitations compared to under 11 percent of those with 16 years or more.[9]

The prevalence of disability increases with age, as one would expect (Fig. 3.8). More than one out of every five people aged 65 and older is limited in one or more of his or her major activities, and nearly half of those aged 85 and older need assistance in activities of daily living. On the other hand, people who are under age 65 and living in the community, i.e., not institutionalized, make up about 40 percent of those who need assistance in activities of daily living.[9]

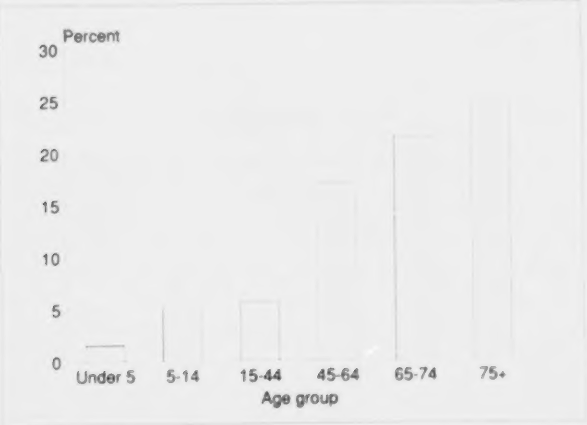

Fig. 3.8

Percentage of people experiencing limitation of major activity, by age (1987)

Source: *Health, United States, 1989 and Prevention Profile*

The major causes of activity limitation vary with age. People under age 18 are most likely to have disabilities associated with mental impairment, asthma, mental illness, deafness and other ear disorders, and speech impairments. Among young adults, orthopedic impairments, such as spinal curvature and other back impairments, are most common, while at older ages degenerative diseases, led by arthritis and heart disease, predominate.[9]

Among ethnic groups, American Indians have the highest rates of activity limitation and Asian and Pacific Islander Americans the lowest.[17] Activity limitations are slightly higher among blacks than among non-Hispanic whites, and both have higher rates of disability than Hispanics.

It is evident from this list that people with disabilities face many of the same risks as other people—nutritional problems, physical inactivity, alcohol and other drug abuse, and stress. But for people with disabilities reducing risks may be a particular challenge. Physical activity, considered especially important in preventing secondary health problems, offers a compelling example. To establish fitness regimens, people with disabilities often need to learn new skills, have access to special equipment, and be part of a support network that enables participation.[7]

Lack of adequate rehabilitation, maintenance therapies, and personal assistance increases the risk of secondary health problems among people with disabilities. Inadequate health insurance, especially among those without access to work-related group insurance, also poses a significant problem for this group.

A clear opportunity exists for health promotion and disease prevention efforts to improve the health prospects and functional independence of people with disabilities. Efforts to adapt existing preventive services and programs are underway. For example, exercise videotapes have been developed for people with paraplegia, quadriplegia, amputation, cerebral palsy, and other physical impairments. Some fitness centers offer modified aerobics, mild exercise in warm water, and other exercises designed to meet the needs of individuals with disabilities. But fitness services are just one of many that are needed. Preventing the occurrence of secondary health problems depends on the availability of a variety of health and social services. Gaps, overlaps, inconsistencies, and inequities in existing programs require the effective coordination of existing services if the health of people with disabilities is to be promoted.[7]

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4. Goals for the Nation

The promise embodied in *Healthy People 2000* involves people in all their variety: age, gender, family relationships, racial and ethnic identity, income level, education, and occupation. It involves birth and death, two sentinel health events. Birth frames the potential for a healthy lifetime; death often summarizes how that potential was used. It involves the values of family, neighborhood, community, and Nation, enabling or undermining the health course that a life takes. It involves an array of risks—some posing apparent, immediate danger and others invisible and delayed in their effects. Finally, it involves medical science and medical care, with their ability to thwart infections, reverse the course of some chronic diseases, and enhance ability to function where limitations exist.

Three overarching goals emerge from the complexity of the health challenge of the 1990s. They permeate the structure and the content of this report. They further define the challenge, especially for health planners, policy-makers, and providers (Fig. 4.1).

- **Increase the span of healthy life for Americans**
- **Reduce health disparities among Americans**
- **Achieve access to preventive services for all Americans**

Fig. 4.1

Healthy People 2000 Goals

Goal I
Increase the Span of Healthy Life for Americans

A central purpose of *Healthy People 2000* is to increase the proportion of Americans who live long and healthy lives. The first goal underlying our strategy for the coming decade clearly states this intention. It encompasses the essential elements of health promotion and disease prevention: prevention of premature death, disability, and disease, and enhancement of the quality of life.

From an individual perspective, healthy life extends into the final quarter of a full century, free from chronic, disabling diseases and conditions, from preventable infections, and from serious injury. It means a full range of functional capacity at each life stage, from infancy through old age, allowing one the ability to enter into satisfying relationships with others, to work, and to play. From a national perspective, healthy life means a vital, creative, and productive citizenry contributing to thriving communities and a thriving Nation.

In the course of this century, average life expectancy at birth has increased by almost 60 percent, from 47 years in 1900 to 75 years in 1987 (Fig. 4.2). This progress has been largely due to the advances of science and public health in conquering life-threatening communicable diseases. The aging of the population and the evolution from communicable diseases to chronic diseases and injuries as the leading causes of death and disability direct our attention to quality of life issues. Both chronic diseases and injuries can be measured by the death certificates that they generate; but the numbers reflecting human suffering and costs associated with heart disease, cancer, nonfatal strokes, diabetes, and lung diseases far outstrip mortality statistics. The results of injury caused both by unintentional trauma and by interpersonal violence are not limited to lives cut short; they also include lives that must overcome brain damage, motor limitations, and other permanent impairments.

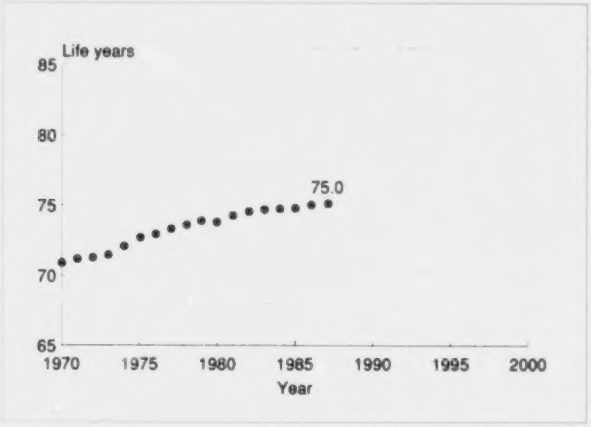

Fig. 4.2

Life expectancy at birth, U.S. population

Source: *Health, United States, 1989 and Prevention Profile*

We can measure our progress in increasing the span of healthy life in several ways. One measure offered here indicates the rate of deaths per 100,000 people before age 75, the approximate average life expectancy at birth in 1990 (Fig. 4.3). Infant mortality, a traditional tool for judging the effectiveness and compassion of health systems, can indicate national progress at the early end of the age spectrum (Fig. 4.4).

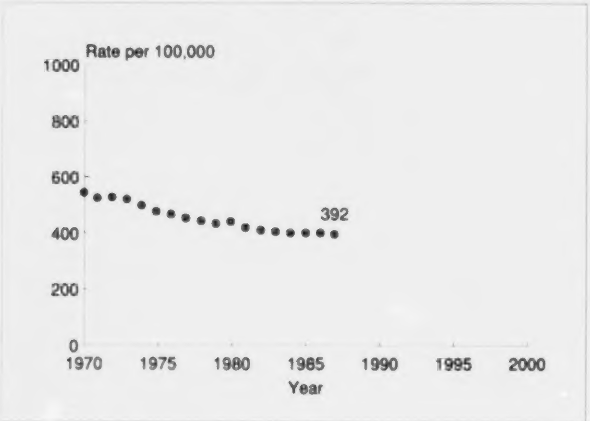

Fig. 4.3

Death rates for people aged 74 and younger, U.S. population (age-adjusted)

Source: National Vital Statistics System (CDC)

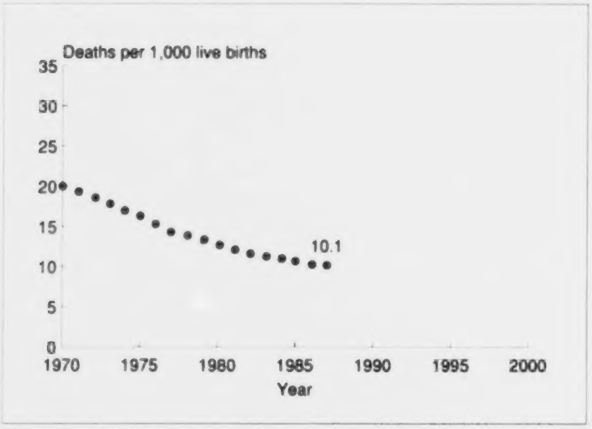

Fig. 4.4

Infant mortality rate, U.S. population

Source: National Vital Statistics System (CDC)

Another measure uses a formula that combines death rates with acute and chronic illnesses, impairments, and handicaps to define average years of healthy life. Using this measure, time spent in a healthy state or years of healthy life can be compared to the average life expectancy at birth. (Fig.4.5) The difference between these two estimates indicates the average amount of time spent in a dysfunctional state due to either chronic or acute limitation. One major indicator of dysfunction is limitation of major activity due to chronic conditions. (Fig. 4.6) Years of healthy life uses a life expectancy model in which standard life table data are adjusted for level of well-being of a population. Measures of well-being represent individual functioning and include measures of mental, physical, and social functioning. For example, social functioning may be measured in terms of an individual's limitation in performing his or her usual social role, whether this be work, school, or housework; physical functioning may be measured in terms of being confined to bed, chair, or couch due to health reasons, or in terms of health-related limitation in mobility. Because years of healthy life is a relatively new type of measure, the baseline estimates may change. Nonetheless it should prove an informative indicator as we track the Nation's health progress.

Over the course of the decade, we will be able to use each of these measures as indicators of our overall progress in increasing the span of healthy life. To explain the basis for that progress, it is necessary to move beyond the broad goals that are proposed here and look to the priorities for preventive action. Healthy life will be expanded to more years and more Americans as a result of efforts to address the priorities defined in the next chapter.

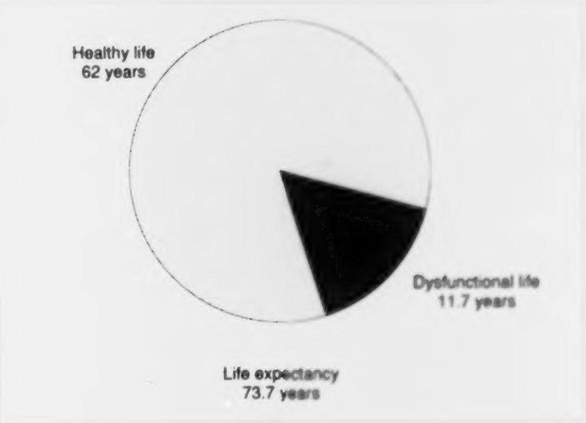

Fig. 4.5

Years of healthy life as a proportion of life expectancy, U.S. population (1980)

Source: National Vital Statistics System and National Health Interview Survey (CDC)

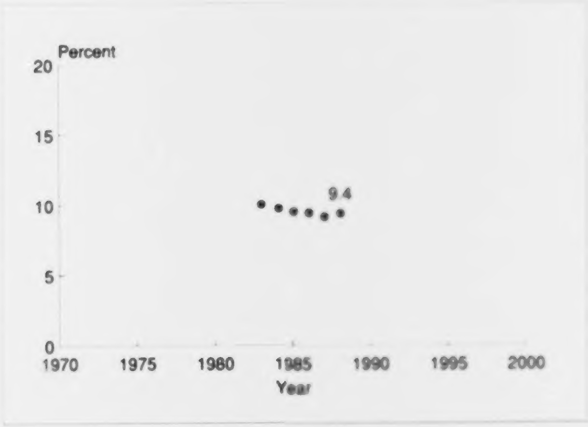

Fig. 4.6

Percentage of people experiencing limitation of major activity, U.S. population (crude rates)

Source: National Health Interview Survey (CDC)

Goal II
Reduce Health Disparities Among Americans

Achieving a healthier America depends on significant improvements in the health of population groups that now are at highest risk of premature death, disease, and disability. The particular health problems of those high risk groups were presented in the previous two chapters. In some instances and for some health risks, they are age groups. In most cases and for virtually all health risks, they are members of certain racial and ethnic groups, people with low income, and people with disabilities. Special attention is needed to close the gap that exists between the majority of the population and the various minority populations. Whether the issue is chronic diseases, infectious diseases, unintentional injuries, or violence-related injuries, the services and protection that might most effectively bring about improvements in their circumstances must be made available.

Although health statistics that take race and ethnicity into account are sparse, the ones that do exist leave no doubt about disparities. The greatest opportunities for improvement and the greatest threats to the future health status of the Nation reside in population groups that have historically been disadvantaged economically, educationally, and politically. These must be our first priority.

Even as average life expectancy at birth edged into the upper 70s, the expected life span for black American male babies born in 1986, 1987, and 1988 actually shrank.[1] The disparities appear across the spectrum of health concerns, not just in average life expectancy. (Fig. 4.7) One perspective on these differences is death rates before age 75 (Fig. 4.8). A particularly sensitive and compelling measure of disparity is infant mortality. Although America's infant mortality rate is at an all-time low, a persistent racial gap remains. Black babies continue to die at twice the rate of white babies (Fig. 4.9).

Another is potential years of life lost before age 65 among white and black men from chronic diseases, calculated as years lost per 1,000 population. In 1987, rates for black men are 55 percent higher for heart disease, 26 percent higher for cancer, 180 percent higher for stroke, and 100 percent higher for lung disease. For homicide, years of potential life lost were 630 percent higher for black men than for white men. Among women of both races, death rates for all causes were lower, but comparisons of premature death of white and black women are equally startling. Lost years of life before age 65 were 134 percent higher among black women for heart disease, 166 percent higher for stroke, and 360 percent higher for homicide.[1] Statistics to compute years of potential life lost are scarce for other racial and ethnic populations, for low-income groups, and for people with disabilities, but analyses of local data from small area studies confirm disparities among these groups as well.

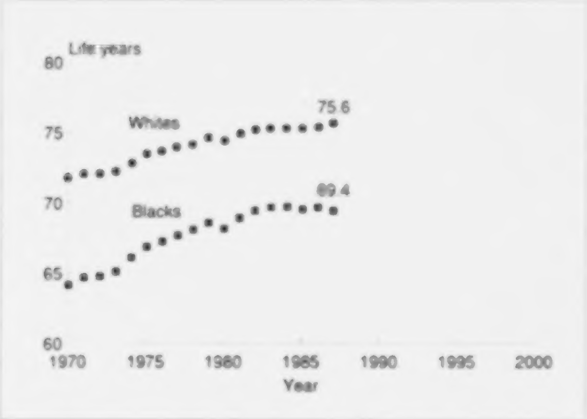

Fig. 4.7

Life expectancy at birth, blacks and whites

Source: *Health, United States, 1989 and Prevention Profile*

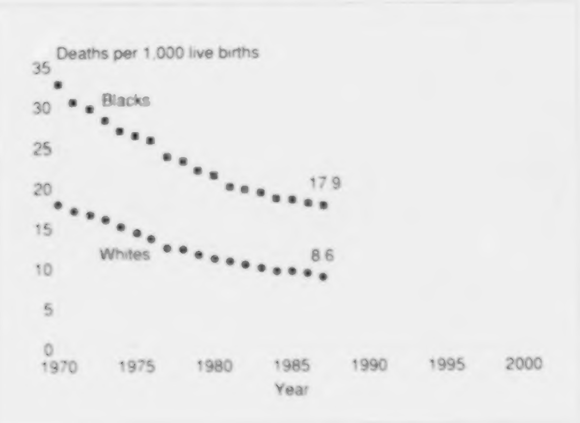

Fig. 4.8

Infant mortality rates, blacks and whites

Source: National Vital Statistics System and National Linked Birth and Infant Death Data Set (CDC)

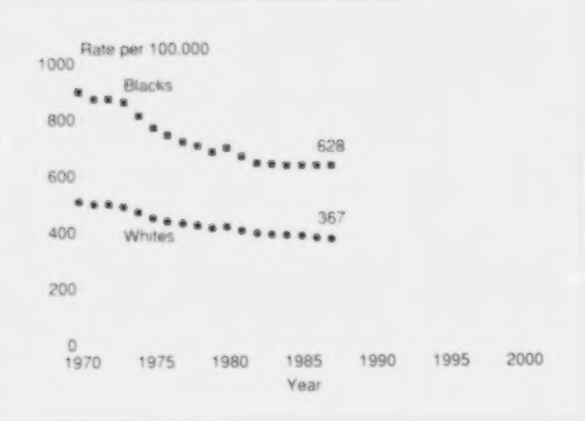

Fig. 4.9

Death rates for people aged 74 and younger, blacks and whites (1987)

Source: National Vital Statistics System (CDC)

Contrasting death rates are mirrored by statistics that depict disability outcome, as well as death. Statistics on years of healthy life reflect the gap between our racial and ethnic groups in the United States (Fig. 4.10). Similarly, rates of disability, measured in terms of limitation of major activity, confirm the fact of inequity in health. The most striking aspect of these comparative rates is the great gap between low-income people and all other groups (Fig. 4.11).

Healthy People 2000 thus calls for special attention to reducing—and finally eliminating—disparities among population groups of Americans. In the priorities for preventive action, this report sets separate, challenging targets when baseline data are available. Usually the targets are sufficient to narrow the gap between the death, disease, or disability rates for population groups and the total population; where trends have been worsening for population groups, targets may appear less challenging but may, in fact, be difficult to achieve because of recent setbacks. In many instances, targets cannot be set in 1990 because measurement tools are not available to provide baselines from which to set realistic, achievable targets for 2000. For this reason, the health status of black Americans, for whom data are most readily available, is used to provide proxy measures of our progress in moving toward the basic goal of equity in health for all our Nation's people.

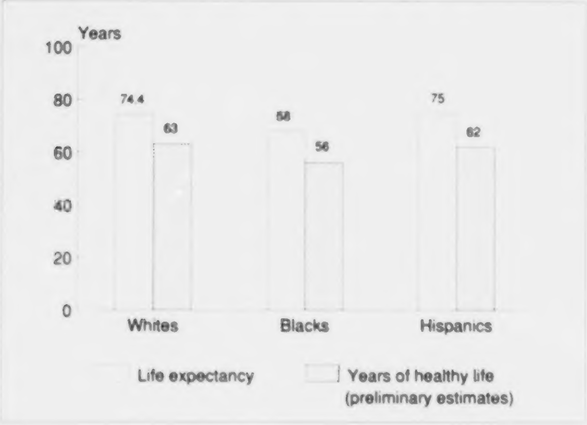

Fig. 4.10

Life expectancy and years of healthy life, whites, blacks, and Hispanics (1980)

Source: Analysis based on data from the National Vital Statistics System (CDC), National Health Interview Survey (CDC), and the U.S. Census Bureau

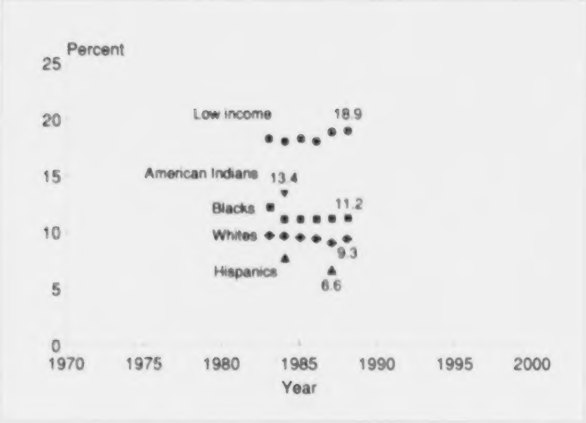

Fig. 4.11

Percentage of people experiencing limitation of major activity, by race and ethnicity (crude rates)

Source: National Health Interview Survey (CDC)

Goal III
Achieve Access to Preventive Services for All Americans

Healthy People 2000 calls for a comprehensive strategy to support the improvements in health that are possible through prevention. This report defines the major parts of that strategy as Health Promotion, Health Protection, and Preventive Services. The priorities for prevention are grouped under these three categories. They are not precise or mutually exclusive categories, but they serve to underscore an important point. Major improvements depend on all three approaches to prevention, not just one. We cannot rely solely on success in persuading people to change their health-related behaviors through health promotion efforts, any more than we can rely solely on environmental improvements or expanded and enhanced clinical interventions.

A health strategy for the 1990s, however, must put particular emphasis on the arena where health professionals in both the private and public sectors have most responsibility, namely the arena of preventive services. Those services, made available to all Americans, can provide the foundation for achievement of other parts of our health strategy. An example, which we will use to track our effectiveness in moving toward this goal, relates to the birth of healthy babies. Prenatal health care is a vital, fundamental ingredient in attaining this sentinel health event (Fig. 4.12). Early and regular prenatal visits to qualified health care providers can ensure greater likelihood that low birth weight and other perinatal complications will be prevented. Prenatal health care services can also serve as a resource and a reinforcer for health promotion efforts that are equally important to healthy pregnancies. The role of prenatal services in education and counseling about parental behaviors, including nutrition, abstinence from tobacco, alcohol, and other drugs, and, even before conception, behaviors that involve risks of sexually transmitted diseases, including HIV infection, is crucial. Likewise, preventive services for pregnant women can serve as the means of monitoring protection against toxic exposures, such as lead, dangerous prescription medications, and radiation.

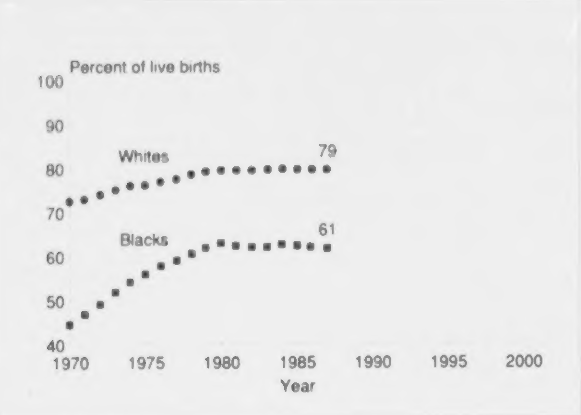

Fig. 4.12

Percentage of pregnant women receiving first trimester prenatal care, blacks and whites

Source: National Vital Statistics System (CDC)

Other preventive services are equally fundamental to our national prevention plan. Basic monitoring of child growth and development; immunization against childhood diseases (Fig. 4.13); appropriate immunization for vulnerable adults against pneumonia and influenza; screening to detect high blood pressure and high blood cholesterol and breast, cervical, oropharyngeal, and colorectal cancers; counseling on nutrition, smoking cessation, and injury prevention; all these services are indispensable parts of prevention. Achievement of this goal clearly requires that health care providers offer, and patients receive, these services. Objectives throughout this report focus on increasing the proportion of primary care providers who routinely offer preventive services to their patients.

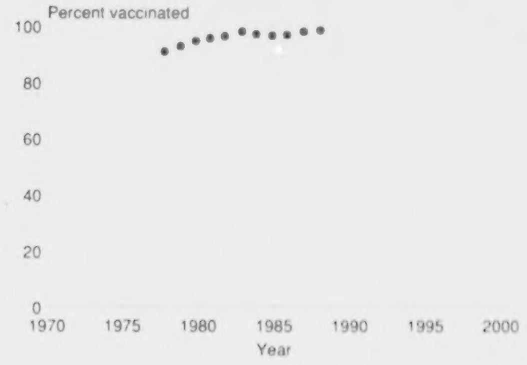

Fig. 4.13

Percentage of children immunized by time of school entry

Source: Center for Prevention Services, CDC

Access to preventive services involves more than just availability of services. Preventive services cannot, and should not, be separated from basic primary health care. Approximately 18 percent of all Americans and 31 percent of those without either private or public health insurance have no source of primary health care. (Fig. 4.14) Thus, tracking of progress to achieve access to preventive services over the coming decade must focus on increases in the number of people who have a primary source of health care and those who have adequate insurance coverage (Fig. 4.15), with particular attention to the extension of health insurance and managed health care systems to cover preventive services such as immunizations, screening, and patient education and counseling.

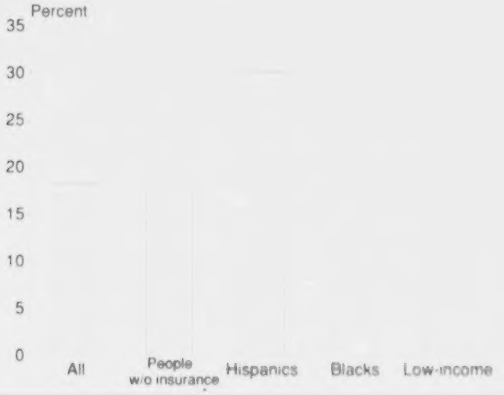

Fig. 4.14

Percentage of people who lack a source of primary care (1986)

Source: Robert Wood Johnson Foundation

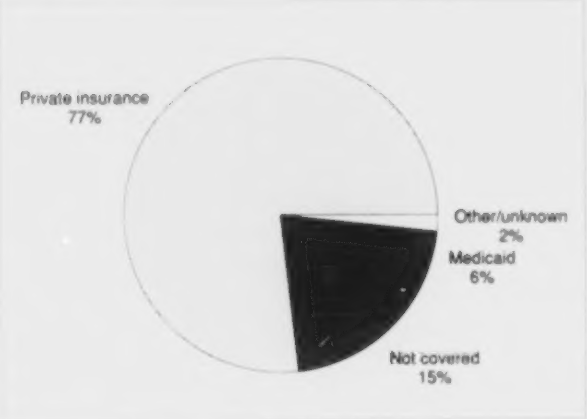

Fig. 4.15

Health insurance coverage for people aged 64 and younger, by type of coverage (1986)

Source: Based on *Health, United States, 1989 and Prevention Profile*

Note: Percent distribution approximate due to overlap among categories.

* * * * * * * *

These three goals—healthy lives for more Americans, elimination of disparities among population groups, access to necessary preventive services for everyone—are our broad national aspirations for health improvements. They can serve as a shared set of values that underpin all of our health promotion and disease prevention work. They can inform our public policy, whether at the Federal, State, or local levels. But taken alone, they do not provide us with adequate direction to guide actual decisions about programs, resource allocation, or professional and personal commitments. The goals are insufficient, unless they are buttressed by a framework of specific and substantive preventive actions that will move us steadily in the direction of their achievement. The next chapter lays out the specifics of the *Healthy People 2000* plan and gives substance to the goals for the Nation.

Reference

[1] National Center for Health Statistics. *Health, United States, 1989 and Prevention Profile*. DHHS Pub. No. (PHS)90-1232. Hyattsville, MD: U.S. Department of Health and Human Services, 1990.

5. Priorities for Health Promotion and Disease Prevention

Healthy People 2000 is a platform for action. The information it contains may be interesting; the statistical data on which it is based may be analytically useful; and the objectives-oriented structure that it employs may serve as a practical model for other planning endeavors. But its value must finally be judged by how well it helps to shape what we do to improve the health of the Nation in the coming decade.

This chapter summarizes the priorities for preventive action. Organized in three basic categories—Health Promotion, Health Protection, and Preventive Services—it outlines specific behavioral risks, disease conditions, and health outcomes that must be effectively addressed in the coming years if we are to take advantage of our opportunities for better health. In addition, a cross-cutting priority that supports each of the others is improvement of our surveillance and data systems to foster more effective decision-making.

Each specific priority is summarized in the following pages, together with representative health objectives drawn from Part II of *Healthy People 2000*. These representative objectives serve as abbreviated examples of the measurable targets that are more fully stated and discussed in greater detail in Part II. While they cannot completely summarize all aspects of the health improvements, risk reductions, and service enhancements that are contained in the chapters of Part II, these examples demonstrate the magnitude and importance of the change envisioned in *Healthy People 2000*.

Health Promotion

Physical Activity and Fitness

Nutrition

Tobacco

Alcohol and Other Drugs

Family Planning

Mental Health and Mental Disorders

Violent and Abusive Behavior

Educational and Community-Based Programs

Physical Activity and Fitness

Regular physical activity increases life expectancy,[74] can help older adults maintain functional independence, and enhances quality of life at each stage of life.[33] The beneficial impact of physical activity touches widely on various diseases and conditions. Regular physical activity can help to prevent and manage coronary heart disease, hypertension, diabetes, osteoporosis, and depression.[26] It has also been associated with a lower rate of colon cancer[77] and stroke[83], and may be linked to reduced back injury.[8] It is an essential component of weight loss programs.

Physical activity is a complex behavior and its relationship with health is multifaceted. Regular vigorous physical activity promotes cardiorespiratory fitness and helps prevent coronary heart disease.[5,75] Activity that builds muscular strength, endurance, and flexibility may protect against injury and disability. And any activity that expends energy is important in weight control. Physical activity can also produce changes in blood pressure, blood lipids, clotting factors, and glucose tolerance, that may help prevent and control high blood pressure, coronary heart disease and diabetes.[38]

While activity should be habitual, it need not be unduly strenuous. People who engage daily in light to moderate exercise, equivalent to sustained walking for about 30 minutes a day, can achieve substantial health gains. Increasing evidence suggests that even small increases in light to moderate activity by those who are least active will produce measurable health benefits.[39,82]

Of particular importance is the role of physical activity in preventing coronary heart disease, the leading cause of death in the United States. A sedentary lifestyle appears to be an independent risk factor for coronary heart disease, nearly doubling a person's risk.[78] Its effect on coronary heart disease risk is almost as great as the better known risk factors, such as cigarette smoking and high blood pressure. Because more people are at risk of coronary heart disease due to physical inactivity than to any other single risk factor, it has an especially great public health impact.

Few Americans engage in regular physical activity despite the potential benefits. Currently, only 22 percent of adults engage in at least 30 minutes of light to moderate physical activity 5 or more times per week, and only 12 percent report that they are this active 7 or more times a week. Less than 10 percent of the population exercises 3 or more times a week at the more vigorous level necessary to improve cardiorespiratory fitness. Nearly 25 percent of adults report no leisure-time physical activity, and the prevalence of sedentary behavior increases with advancing age.

To increase physical activity and fitness, by the year 2000...

1.3 Increase moderate daily physical activity to at least 30% of people (a 36% increase)

1.5 Reduce sedentary lifestyles to no more than 15% of people (a 38% decrease)

Other objectives target sustained combined changes in diet and activity patterns for those who are overweight; physical education in schools; sponsorship by employers of worksite physical activity programs; increasing accessibility of community resources like trails and pools; and a stronger focus by primary care providers on the physical activity patterns of their patients.

Nutrition

In ways often interrelated with patterns of physical inactivity, dietary factors are associated with 5 of the 10 leading causes of death in the United States: coronary heart disease, some types of cancer, stroke, noninsulin-dependent diabetes mellitus, and atherosclerosis. The 1988 *Surgeon General's Report on Nutrition and Health*[79] found that for the 2 out of 3 Americans who neither smoke nor drink, eating patterns may shape their long-term health prospects more than any other personal choice. In general, excesses and imbalances of some food components in the diet have replaced once-prevalent nutrient deficiencies as the principal concern.

While many dietary components are involved in diet and health relationships, chief among them is the disproportionate consumption of foods high in fats (especially saturated fats), often at the expense of foods high in complex carbohydrates and dietary fiber that may be more conducive to health.[79] To help promote health and prevent chronic disease, the *Dietary Guidelines for Americans*,[91] issued by the United States Departments of Health and Human Services and Agriculture, recommend one should eat a variety of foods; maintain healthy weight; choose a diet low in fat, saturated fat, and cholesterol; choose a diet with plenty of vegetables, fruits, and grain products; use sugars only in moderation; use salt and sodium only in moderation; and, if alcoholic beverages are consumed, do so in moderation.

Overweight affects about 26 percent of the population. It is a particular problem for poor and minority populations, affecting 44 percent of black women over age 20 and 37 percent of all women below the poverty level. Obesity has been linked to increased risk for diabetes mellitus, high blood pressure and stroke, coronary heart disease, some types of cancer, and gallbladder disease.[79]

Dietary fat contributes more than twice as many calories per unit of weight as carbohydrate or protein, and currently constitutes 36 percent of the calories in the average American diet. Considerable evidence associates diets high in fat with increased risk of obesity, some types of cancer, and possibly gallbladder disease.[79] Strong and consistent evidence relates saturated fat intake to high blood cholesterol and increased risk for coronary heart disease. Moreover, Americans eat only about half of the dietary fiber recommended by the National Cancer Institute to help reduce the risk for some types of cancer. Dietary fiber is readily available from a variety of foods such as vegetables, fruits, and grains, which are also low in fat.

To improve nutrition, by the year 2000...

2.3 Reduce overweight to a prevalence of no more than 20% of people (a 23% decrease)

2.5 Reduce dietary fat intake to an average of 30% of calories (a 17% decrease)

Other objectives target increasing consumption of vegetables, fruits, and grain products; decreasing sodium consumption; increasing calcium intake, in particular for young people and pregnant or lactating women; increasing breastfeeding; reducing iron deficiency and growth retardation in children; useful and informative nutrition labeling for all food products; increasing availability of low-fat products; better identification of low-fat, low-calorie food choices in restaurants; more attention to nutrition education and food choices in schools; better use of worksites for nutrition education and services; and a stronger focus by primary care providers on the nutritional practices of their patients.

Tobacco

Tobacco use is the most important single preventable cause of death in the United States, accounting for one of every six deaths, or some 390,000 deaths annually.[73] It is a major risk factor for diseases of the heart and blood vessels; chronic bronchitis and emphysema; cancers of the lung, larynx, pharynx, oral cavity, esophagus, pancreas, and bladder; and other problems such as respiratory infections and stomach ulcers.[73] Cigarette smoking is responsible for an estimated 21 percent of all coronary heart disease deaths (40 percent of those under age 65), 30 percent of all cancer deaths, and 87 percent of lung cancer deaths in the United States. The risk of dying from lung cancer is 22 times higher for men and 12 times higher for women who smoke than for lifetime nonsmokers. Passive or involuntary smoking causes lung cancer and other diseases in healthy nonsmokers and severe respiratory problems in children. Middle ear infections in children have been linked to passive smoking.

Cigarette smoking during pregnancy is a risk factor for low birth weight, prematurity, miscarriage, sudden infant death syndrome, and other maternal and infant health problems. Between 20 and 30 percent of the incidence of low birth weight,[36] up to 14 percent of preterm deliveries, and about 10 percent of all infant deaths are attributable to maternal cigarette smoking.[73] Yet 25 percent of pregnant women smoke throughout their pregnancy.[50]

Cigarette smoking has declined dramatically since 1964, when the first Surgeon General's report on smoking appeared. In 1987, 29 percent of adults smoked compared to 40 percent in 1965. Nearly half of all living adults who ever smoked have quit. Nevertheless, smoking rates remain high in certain populations, including blacks, blue collar workers, and people with fewer years of education. In 1987, 34 percent of blacks smoked.[73] Smoking is a special problem for workers with exposure to hazardous substances that may compound the risk.

Among youth, more than half of 8th graders and nearly two-thirds of 10th graders report having tried cigarettes.[4] More than one-fourth of 10th graders report having smoked a cigarette during the preceding month and nearly one in five reports smoking a pack or more in the previous month.

To reduce use of tobacco, by the year 2000...

3.4 Reduce cigarette smoking prevalence to no more than 15% of adults (a 48% decrease)

3.5 Reduce initiation of smoking to no more than 15% by age 20 (a 50% decrease)

Other objectives target reducing lung cancer and chronic obstructive lung disease deaths; increasing smoking cessation during pregnancy; reducing use of smokeless tobacco; prevention education and tobacco-free environments in schools; restrictions on smoking in the workplace and other public places; enforcement of prohibition of sales of tobacco products to youth; restrictions on tobacco advertising and promotion targeting youth; State plans to reduce tobacco use; and more smoking cessation assistance to patients by primary care providers.

Alcohol and Other Drugs

Approximately two-thirds of American adults drink alcohol at least occasionally. Of these, it is estimated that about 18 million currently experience problems as a result of alcohol use, and about 7 percent of drinkers experience moderate levels of dependence symptoms.[65] Alcohol is a factor in approximately half of all homicides, suicides, and motor vehicle fatalities.[76] With fetal alcohol syndrome affecting as many as 3 infants per 1,000 live births in some hospital reports, it is the leading preventable cause of birth defects.[65] Alcohol is also responsible for numerous deaths due to liver disease. Of special concern are the problems for young people. Nine out of ten high school seniors report using alcohol at least once.

Drug use is also a dominant societal concern. Surveys in 1988 found that 21 million Americans had used cocaine at least once, and 21 million also had used marijuana in the last year.[63] Among high school seniors, almost 44 percent report having tried marijuana, and 10 percent report ever using cocaine.[45] It has been estimated that one in four American adolescents is at very high risk of alcohol and other drug problems and their consequences.[20] The data may underestimate the problem because existing surveys fail to count high risk youth who have dropped out of school. Drug abuse is linked to high rates of violent crime in the Nation, to transmission of the HIV virus, and to developmental problems in infants.

These are the immediate health problems posed by alcohol and other drugs. Their abuse, however, is closely related to a host of other social and health problems, such as early unwanted pregnancy, delinquency, and school failure. The economic cost of problems attendant to alcohol abuse was estimated in 1990 to be $70 billion, and another $44 billion for drug problems.[27,80] Alcohol and other drug abuse appears to be declining across the total population. Use of crack cocaine, however, is on the rise, especially in some urban centers. Homeless people are at special risk of alcohol abuse.[64]

In the past decade, public awareness of this problem grew, uniting diverse groups in the common goal. Businesses, schools, parent groups, and minority organizations have developed ways to fight the pervasive dangers of alcohol and other drugs. A changing social climate has been accompanied by legislative and policy actions, particularly concerning drinking and driving.

To reduce alcohol and other drug abuse, by the year 2000...

4.1 **Reduce alcohol-related motor vehicle crash deaths to no more than 8.5 per 100,000 people (age adjusted)**
(a 12% decrease)

4.6 **Reduce alcohol use by school children aged 12 to 17 to less than 13%; marijuana use by youth aged 18 to 25 to less than 8%; and cocaine use by youth aged 18 to 25 to less than 3%**
(50% decreases)

Other objectives target increasing the average age of first use of addictive substances; reducing occasions of heavy drinking by young people; reducing aggregate per capita alcohol consumption nationally; increasing awareness of the harmful effects of addictive substances; better access to treatment programs; stronger and better enforced laws related to driving under the influence of intoxicants; better access of workers to assistance for problems; policies to reduce minors' access to alcohol; and greater involvement of primary care providers in dealing with these problems.

Family Planning

Families are the bedrock of our society. Decisions about forming a family are of critical importance. Decisions made today may have long-term consequences. Safe and healthful childbearing both contributes to, and is a result of, effective family planning. Miscarriage, stillbirth, and infant mortality are tragic examples of problems that occur more frequently as a result of family planning failures. Family planning is defined here as the process of establishing the preferred number and spacing of children in one's family and selecting the means by which these preferences are achieved. It presupposes the importance of family and the importance of planning. It requires that fundamental questions be addressed concerning an individual's relationship to the lives, health, and well-being of others.

Successful implementation of family planning choices requires mature, thoughtful decisions accompanied by motivation to carry out those decisions. It requires the exercise of personal responsibility. There are many effective means by which family planning choices can be implemented. Childbearing, adoption, abstinence from sexual activity outside of a monogamous relationship, use of contraception methods, natural family planning, and treatment of infertility are all means of reaching desired family planning goals.

Despite the fundamental importance of these decisions to each individual and to society as a whole, problems attendant to poor family planning exert a tremendous toll on our Nation. In 1988, nearly half of American women surveyed reported that their pregnancies in the last 5 years had been mistimed or unwanted—56 percent if adjustment is made for unreported abortions.[69]

The problem is most pressing among young people. More than three out of four young women and 85 percent of young men have had sexual intercourse by age 20.[69,87] Each year, one out of ten young women in this age group becomes pregnant. By age 20, approximately 40 percent of all women have been pregnant while 63 percent of black women have been pregnant.[90] An estimated 84 percent of these pregnancies were unintended,[32] and abortion rates among American teenagers are considerably higher than for many other countries.

To improve family planning, by the year 2000...

5.1 Reduce teenage pregnancies to no more than 50 per 1,000 girls aged 17 and younger
(a 30% decrease)

5.2 Reduce unintended pregnances to no more than 30% of pregnancies
(a 46% decrease)

Other objectives target reducing sexual intercourse among teenagers; reducing nonuse of contraceptives among those who are unmarried and sexually active; increasing effectiveness with which contraceptives are used; improving communication between adolescents and parents on human sexuality; increasing availability of appropriate preconception counseling; increasing referral rates to appropriate services; increasing availability of information on adoption for unmarried pregnant patients; and reducing rates of infertility.

Mental Health and Mental Disorders

Mental health refers to an individual's ability to negotiate the daily challenges and social interactions of life, without experiencing undue emotional or behavioral incapacity. It can be affected by numerous factors ranging from exogenous stresses presenting in ways that may be difficult to manage to organic disease or genetic defects that impair brain function. An estimated 23 million noninstitutionalized adults in the United States have cognitive, emotional, or behavioral disorders, not including alcohol and other drug abuse. Schizophrenic disorders most often result in functional disabilities, but depression is the most common of the major disorders, affecting about 5 percent of the population at any one time.

Suicide is clearly the most serious of the potential outcomes of these disorders and it claims more than 30,000 lives each year.[70] Injuries from firearms are directly responsible for a majority of suicidal deaths, and much of the increase in suicide that has taken place since the 1950s is specific to firearm deaths.[6,46] There has been a steady increase in deaths from suicide among youth aged 15 to 19, and by the mid-1980s suicide was the second leading cause of death in this age group.

A variety of approaches have been proposed to reduce the impact of mental health problems. Stress, whether stemming from life events, chronic strain, or environmental pressures, is associated with biological changes linked to cognitive, emotional, and behavioral dysfunctions. Healthful habits, such as good nutrition and adequate amounts of exercise, and relaxation techniques may be useful in helping to relieve stress. Because people with low levels of control over their environment (actual or perceived) appear to be at greater risk, interventions have also been directed at increasing individuals' resources and coping skills through education and social support. For those needing more aggressive attention, medical interventions are available that include antidepression drugs, psychotherapeutic agents, and biofeedback.

Childhood developmental delays and specific skill disorders have also been linked to learning and adjustment problems in adolescence and early adulthood. Early interventions with parents and children that address prenatal care, parental skills, and remedial help in early school programs may help prevent developmental problems and their progression to mental health problems.

To improve mental health and prevent mental disorders, by the year 2000...

6.1 Reduce suicides to no more than 10.5 per 100,000 people (a 10% decrease)

6.5 Reduce adverse effects of stress to less than 35% of people (an 18% decrease)

Other objectives target reducing prevalence of mental disorders; increasing utilization of community support programs; increasing treatment for those with major depressive disorders; increasing use of broad social support mechanisms for those with trouble coping; more attention by employers to services related to managing employee stress; better access to mutual-help clearinghouses; and more attention by primary care providers to the cognitive, emotional, and behavioral needs of their patients.

Violent and Abusive Behavior

Violent and abusive behavior (intentional injury) exacts a large toll on the physical and mental health of Americans. Child abuse, spouse abuse, and other forms of intrafamilial violence continue to threaten the health of thousands of American families. Homicide and suicide account for over one-third of the more than 145,000 injury deaths that occur in the United States each year. Because of its growing prominence as a source of the leading health problems experienced by Americans, violent and abusive behavior has been increasingly recognized as an important public health problem.

Homicide is the 11th leading cause of death in the United States, accounting for nearly 21,000 deaths in 1987.[51] Men, teenagers, young adults, and minority group members, particularly blacks and Hispanics, are most likely to be murder victims. It is the leading cause of death for blacks between the ages of 15 and 34.[13] Overall homicide rates for blacks have declined since 1970, while the rates for whites have increased.[13] Most homicides are committed with a firearm, occur during an argument, and occur among people who are acquainted with one another. Homicide rates in the United States far exceed those of any other developed country.

Assault injuries are another consequence of interpersonal violence. Each year between 1979 and 1986 more than 2.2 million people suffered nonfatal injuries from violent and abusive behavior. Of these injured victims, 1 million received medical care and 500,000 were treated by emergency medical facilities.[25] More than 25 percent of the Nation's 10,000 to 15,000 spinal cord injuries each year are the result of assaultive violence. Firearms account for 60 percent of all homicides and suicides, and a substantial proportion of all traumatic spinal cord injuries.[44]

Intrafamilial violence is more prevalent than often recognized. In 1986 an estimated 1.6 million children nationwide experienced some form of abuse or neglect.[95] Physical abuse accounted for the greatest portion of abuse incidents, followed by emotional and then sexual abuse. Studies also suggest that between 2 and 4 million women are physically battered each year by partners including husbands, former husbands, boyfriends, and lovers. Between 21 and 30 percent of all women in the United States are estimated to have been beaten by a partner at least once. More than 1 million women seek medical assistance for injuries caused by battering each year, and the vast majority of domestic homicides are preceded by episodes of violence.[56]

To reduce violent and abusive behavior, by the year 2000...

7.1 Reduce homicides to no more than 7.2 per 100,000 people (a 15% decrease)

7.6 Reduce assault injuries to no more than 10 per 1,000 people (a 10% decrease)

Other objectives target reducing weapon-related injury deaths; reducing child and spouse abuse, reducing rape; reducing weapon-carrying by adolescents; reducing inappropriate storage of weapons; improving emergency treatment, housing, and referral services for battered women, children, and older people; improving school programs for conflict resolution; and strengthening State-based efforts in violence prevention.

Educational and Community-Based Programs

A supportive social environment may be the most important factor in changing behaviors that contribute to many of today's leading health threats. Consequently activity and leadership at the community level is fundamental to progress. Educational and community-based programs, developed to reach people outside of traditional health care settings, may address one risk factor in one setting, but increasingly they use multiple interventions in a variety of settings.

Many involve various sectors and levels of society. Changes in the social and physical environment call for the involvement of social institutions, businesses, legislative and judicial bodies, the media, and other parts of the community. Because comprehensive, communitywide programs aim to draw upon and become involved in as many aspects of community life as possible, they require a high degree of cooperation and coordination between groups that are often not traditional partners: environmental citizen groups and manufacturers, health professionals and churches, employers and hospitals. Important to the success of these partnerships are information networks and coordinating mechanisms, both of which can help streamline services and interventions.

Schools offer a natural locus for the provision of crosscutting educational interventions in health, and studies have shown that school health education is an effective means of helping children improve their health knowledge and develop attitudes that facilitate healthier behaviors. Yet only 25 States currently mandate comprehensive school health education programs, and implementation is spotty in even these States.

Similarly, the workplace can be an excellent site for health promotion programs. More than 85 percent of adult Americans spend much of their day at their workplace. Numerous studies have shown the benefits of worksite health promotion programs in improving employee health, reducing insurance claims, improving morale, reducing absenteeism, and reducing employee turnover. Among workplaces with more than 50 employees, about two-thirds report offering at least one health promotion activity.[71] A much smaller share offers a comprehensive package to employees, and even fewer include special activities for family members or retirees.

To enhance educational and community-based programs, by the year 2000...

8.4 Provide quality K-12 school health education in at least 75% of schools

8.6 Provide employee health promotion activities in at least 85% of workplaces with 50 or more employees
(a 31% increase)

Other objectives target increasing reading levels and high school graduation rates; increasing preschool programs for disadvantaged children; strengthening the public health system; increasing accessibility of health promotion programs for older people; development of broad State-based strategies for health promotion; and stronger focus on the health promotion needs of minorities.

Health Protection

Unintentional Injuries

Occupational Safety and Health

Environmental Health

Food and Drug Safety

Oral Health

Unintentional Injuries

Unintentional injuries are the fourth leading cause of death in the United States, killing about 100,000 people a year, and are a major cause of disability.[51] Nonfatal injuries are responsible for one of every six hospital days and one of every 10 hospital discharges.[81] Nearly two-thirds of all injury deaths and 84 percent of all injuries resulting in hospitalization involve unintentional injuries. Motor vehicle crashes account for approximately one-half of the deaths from unintentional injuries. Deaths from falls rank second, followed by deaths from poisoning, drowning, and residential fires.[17]

At highest risk are the young and older adults. During the first four decades of life injuries account for more deaths than either chronic or infectious diseases, taking more than 2 million potential years of life from Americans every year. Males are more than twice as likely to die from unintentional injuries than females, and blacks have higher death rates than whites.[51] American Indian and Alaska Natives have disproportionately higher injury death rates.[30]

Injuries have been estimated to cost the United States more than $100 billion annually due to lost productivity and medical care, with a third of these costs attributable to falls and 28 percent to motor vehicle crashes.[81]

About 46,000 people die and 3,500,000 people are injured annually in motor vehicle crashes. By themselves, motor vehicle crashes rank as the fifth leading cause of death in the United States, and approximately half of these are alcohol-related. Alcohol-related traffic crashes are the leading cause of death and spinal cord injury for young Americans.[60]

Although use of automobile safety restraints has increased in recent years, only 42 percent of people currently report using them. Increasing this share to 85 percent could save about 10,000 lives per year. Given the fact that almost 30 percent of motor vehicle fatalities are related to motorcycle, pedestrian, and bicycle casualities, increasing helmet use could also prove of substantial benefit.[61,62]

Many injuries are multifactorial in nature. Alcohol use is a factor in numerous unintentional injuries, including about half of all motor vehicle fatalities and a sizable share of drownings. Of the 33,000 firearm-related deaths in 1987, nearly 3,400 were children aged 1 through 19.[14] Of these, about 15 percent were unintentional and often due to improper handling, accessibility to children, and lack of safety mechanisms.[14] Progress in reducing unintentional injuries will require full participation of the fields of education, transportation, law, engineering, architecture, and safety sciences.

To reduce unintentional injuries, by the year 2000...

9.1 Reduce unintentional injury deaths to no more than 29.3 per 100,000 people
(a 15% decrease)

9.12 Increase automobile safety restraint use to at least 85% of occupants
(a 102% increase)

Other objectives target death from motor vehicle crashes, falls, drownings, and residential fires; occurrence of hip fractures, poisonings, head injuries, and spinal cord injuries; use of protective helmets; extension of safety belt and motorcycle helmet use laws; handgun design; expanded installation of fire sprinklers and smoke detectors; better roadway design and markers; injury prevention instruction in schools; and involvement of primary care providers in counseling on safety.

Occupational Safety and Health

Approximately 110 million people make up the American workforce, with most spending major portions of their days in their work environments. Of the estimated 10 million injuries that occur annually among workers, about 3 million are severe and include some 3,400 to 11,000 deaths. Although the number of fatal occupational injuries has gradually declined in recent years, work-related illnesses and nonfatal injuries appear to be increasing. During 1987, permanent impairments suffered on the job grew from 60,000 to 70,000, total disabling injuries numbered 1.8 million, and combined occupational illnesses and injuries in the manufacturing industries increased by 12 percent.[7]

Approximately 40 percent of work-related fatalities involved people between 25 and 44 years old. More than 20 percent of fatal occupational injuries in the mid-1980s involved highway vehicles, which were the leading cause of death in seven of eight industry divisions. Other causes included falls (13 percent), nonhighway industrial vehicular injuries (11 percent), blows other than by vehicles or equipment (8 percent), and electrocutions (7 percent). Other leading work-related problems include occupational lung diseases, musculoskeletal injuries, and occupational cancers.[7]

Those occupations with relatively higher rates of injury include mining, agriculture, construction, manufacturing, trucking, and warehousing. The largest numbers (as opposed to rates) of injuries occur in industries with large total workforces such as eating and drinking establishments, grocery stores, hospitals, trucking companies, nursing homes, department stores, and hotels/motels. While employees in occupations related to these enterprises comprise about one-fifth of the total workforce, they report one-fourth of the injuries.[7]

Prevention of occupational health hazards rests on the basic principles of control technology: engineering controls, work practices, personal protective equipment, and monitoring of the workplace for emerging hazards. Despite the number of occupational injuries, effective prevention is practiced in many workplaces, and approximately 48 percent of all establishments report no injuries in a given year.

To improve occupational safety and health, by the year 2000...

10.1 Reduce work-related injury deaths to no more than 4 per 100,000 workers (a 33% decrease)

10.2 Reduce work-related injuries to no more than 6 per 100 workers (a 22% decrease)

Other objectives target reductions in cumulative trauma disorders (e.g., from repetitive motion, pressure, or noise), occupational skin disorders, and, among health workers, hepatitis B infection; use of occupant protection systems by workers; reducing workplace exposure to lead; State implementation of plans for identification and control of major work-related illnesses and injuries; State standards to prevent work-related lung disease; increasing worksites with formal plans for worker health and safety, including back injury prevention programs; expanded State assistance to small businesses in implementation of worker health and safety programs; and greater attention by primary health care providers to occupational health exposures.

Environmental Health

Environmental measures have long been a mainstay of public health. State and local efforts to assure safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed substantially to public health improvements in the United States. The most difficult challenges for environmental health today come from uncertainties about the toxic and ecologic effects of the use of fossil fuels and synthetic chemicals in modern society. An estimated 82 percent of major industrial chemicals have not been tested for their toxic properties and links to specific diseases, and only a small proportion of chemicals have been adequately tested for their ability to cause or promote cancer.[68] Still, enough is known to target improvement in several areas.

Exposure to lead, air pollutants, and radon are good examples. Exposure to high levels of lead is toxic to the central nervous system and can be fatal. Even low levels of exposure can result in persistent impairments in central nervous system function, especially in children, including delayed learning, impaired hearing, and growth deficits. Yet an estimated 2 out of 3 poor inner-city black children aged 6 months through 5 years have blood lead levels above 15 µg/dL and 1 out of 10 has levels above 25 µg/dL. For the Nation as a whole, nearly 3 million children are at some risk from elevated lead levels.[1] Decreased levels of lead in gasoline, air, and food and releases from industrial sources have resulted in lower mean blood lead levels. However, lead in paint, dust, and soil in inner-city urban areas has been lowered only to a limited extent. A strong national effort is needed to reduce lead in the home environment.

Airborne pollutants have been shown to contribute to lung diseases, bronchial asthma, cancer, neural disorders, and eye irritation.[21] Standards have been set by the Environmental Protection Agency for ozone, carbon monoxide, particulates, sulfur dioxide, nitrogen dioxide, and lead. Air quality has improved greatly since 1970, but in 1988 less than 50 percent of Americans lived in counties that met all the EPA standards for air quality for the previous 12 months.[22] Additional measures are necessary to reduce contamination from motor vehicles and other sources.

Radon comes from rock and soil, enters buildings through cracks in foundations or basements, and when inhaled releases ionizing radiation that can damage lung tissue and lead to lung cancer. Along with tobacco smoke, it is a leading indoor air hazard, and as many as an estimated 8 million homes may have radon at a level requiring correction.[21] Low-cost test kits are available to identify exposures, but only about 5 percent of homes have been tested.[72]

To improve environmental health, by the year 2000...

11.4 Eliminate blood lead levels above 25 µg/dL in children under age 5

11.5 Increase protection from air pollutants so that at least 85% of people live in counties that meet EPA standards
(a 71% increase)

11.6 Increase protection from radon so that at least 40% of people live in homes tested by homeowners and found to be/made safe
(a 700% increase)

Other objectives target reducing infectious agent and chemical contamination of drinking water supplies and surface water; reducing human exposure to toxic agents released into the air, water, and soil; reducing environmental burden of solid waste contamination; eliminating immediate risks from hazardous waste sites; improving household management of recyclable materials and toxic waste materials; and better State-based systems to track environmental exposures and diseases.

Food and Drug Safety

American consumers currently benefit from extensive food and drug safety assurance systems. Microbial contamination of food in the production process is rare. Inspections of foods for pesticide residues consistently find that between 96 and 98 percent of foods tested do not contain pesticides in excess of legal limits—and those limits are typically set with a wide margin for error, 100 to 1,000 times lower than a level causing toxic effects in animals.[23] Similarly, careful procedures are established to test new drugs, and each year FDA officials inspect one-third of 18,000 drug and biologics establishments in the United States to ensure proper manufacture and handling.[24]

Nevertheless, outbreaks of foodborne disease and incidents involving drugs continue to occur and cause illness or death. Some problems are caused by failures in the protective systems established at the Federal, State, and local levels. In many cases, problems are caused by foods improperly handled by consumers, the misuse of a prescribed drug, and drug interactions that occur when different health care providers unknowingly prescribe different drugs for the same patient.

Based on the number and severity of cases that occur, *Salmonella*, *Campylobacter*, *Escherichia coli*, and *Listeria* are four of the most important foodborne pathogens in the United States—largely related to time and temperature abuse of foods. One problem that has increased markedly over the decade of the 1980s is illness due to infection with *Salmonella enteritidis*. This foodborne disease is often traced to contaminated eggs and results in severe diarrhea, fever, vomiting, and can even cause death. The 77 outbreaks occurring in 1989 involved nearly 2,400 cases and 14 deaths.[14] Expanded efforts are needed both to reduce source exposure (e.g., sale of contaminated eggs) and to improve food preparation and handling techniques that can protect against this problem.

The principal drug safety issue of the coming years is related to polypharmacy, the use of multiple prescription and over-the-counter medications, especially by older people with chronic health problems. This problem calls for a coordinated prevention approach, involving care on the part of those who prescribe medications to ensure that they will not adversely interact with previously prescribed drug regimens still in use; attentiveness on the part of pharmacists to spot potential medication problems as their customers purchase new prescription drugs; and education for consumers to help them comply with prescribed pharmacologic therapies.

To ensure food and drug safety, by the year 2000...

12.2 Reduce salmonella infection outbreaks to fewer than 25 yearly (a 68% decrease)

Other objectives target reductions in the incidences of foodborne diseases; improving food handling techniques on the part of consumers; better pharmacy-based systems to provide alerts to customers of potential adverse drug interactions; and more regular review by primary care providers of all medications used by their older patients.

Oral Health

Although the prevalence of dental caries or cavities among children has declined steadily since the 1940s, oral diseases remain a prevalent health problem in the United States. On average, among adults 40 through 44, about 1 out of 4 tooth surfaces have been affected by decay.[66] Currently 53 percent of children aged 6 to 8 and 78 percent of 15 year olds have caries.[67] Tooth loss is a major problem among people aged 65 and older, with nearly 40 percent of those aged 65 and older having no natural teeth in 1986.[53] Periodontal diseases, especially gingivitis, also affect many adults. The total cost of dental care to the Nation was more than $27 billion in 1988.[28]

Regular care is a factor in maintaining oral health. However, nearly half the population in the United States does not obtain regular oral health care, and among low-income people the proportion not receiving care is higher.[53] The proportions of black and Hispanic adolescents with untreated decay are approximately 65 percent higher than for the total population.[57,67] One out of every four American Indian and Alaska Native adults aged 35 through 44, and nearly three out of four aged 55 and older, has fewer than 20 natural teeth.

Among preventive measures, community water fluoridation is the single most effective and efficient means of preventing dental caries in children and adults, regardless of race or income level. Yet more than one-third of people with community water systems do not have adequate fluoride, and only about half of those without fluoridated water receive fluoride from other sources.[10] Improvements are needed. Other factors that can improve oral health include regular self-care, avoiding foods that promote caries, and not using tobacco. Excessive alcohol consumption also affects oral health.

Oral cancer is also a serious problem, with 30,000 new cases and 8,600 deaths a year.[88] In fact, oral cancer deaths are more numerous than deaths from cervical cancer. Because 75 percent of oral cancers can be attributed to tobacco and alcohol use, they are preventable. Moreover, because early treatment can reduce mortality, attention is needed for its early detection.

To improve oral health, by the year 2000...

13.1 Reduce the prevalence of dental caries to no more than 35% of children by age 8
(a 34% decrease)

13.4 Reduce edentulism to no more than 20 percent in people aged 65 and older
(a 44% decrease)

Other objectives target expanding treatment of dental caries; reducing periodontal disease and tooth loss; increasing use of protective sealants on permanent teeth in children; improving parental practices that prevent baby bottle tooth decay; and improving use of oral health screening and follow-up services for all age groups.

Preventive Services

Maternal and Infant Health

Heart Disease and Stroke

Cancer

Diabetes and Chronic Disabling Conditions

HIV Infection

Sexually Transmitted Diseases

Immunization and Infectious Diseases

Clinical Preventive Services

Maternal and Infant Health

Of every 1,000 babies born in the United States each year, about 10 die before they reach their first birthday.[70] Although the infant mortality rate in the United States is declining and has reached an all-time low, the pace of progress has slowed. Mortality is also higher for black infants, who die at twice the rate of white infants, and data from the National Birth Cohort Study of 1983 indicate that other minorities may have higher rates than had been estimated previously. Leading causes of deaths among infants are congenital anomalies, sudden infant death syndrome (SIDS), respiratory distress syndrome, and disorders relating to short gestation.[49]

The most prominent risk factor for infant death, low birth weight (less than 2,500 grams), occurred among nearly 7 percent of all births in 1987 and was associated with more than half of all infant deaths. Black babies have twice the risk of having low birth weight. Low birth weight is also linked to a variety of nonfatal disorders, including neurodevelopmental conditions, learning and behavior problems, and lower respiratory tract infections. In 1985, approximately 11,000 low-birth-weight infants were born with moderate to severe disabilities.[55] From 1970 to 1981 low birth weight declined about 1.3 percent per year, but has since been stagnant.[70] A number of risk factors have been identified for low birth weight, including: younger and older maternal age, high parity, poor reproductive history (especially history of low birth weight), low socioeconomic status, low level of education, late entry into prenatal care, low pregnancy weight gain, smoking, and other substance abuse.[35] Smoking is estimated to be associated with from 20 to 30 percent of all low-birth-weight births in this country.[36] Illicit drug use as a contributor to low birth weight has increased in some urban areas.

An expectant mother with no prenatal care is three times more likely to have a low-birth-weight baby. Despite the importance of early prenatal care in protecting against low birth weight and infant deaths, nearly one of every four pregnant women in the United States receives no care in the first trimester of her pregnancy.[70] A disproportionate share of these mothers has low income, less than a high school education, or is very young.[86] Between 1970 and 1980 there was a significant trend toward increasing early entry into prenatal care, but that trend has since plateaued.[70] Contributing to this problem is the fact that an estimated 14 million women of reproductive age have no insurance to cover maternity care.[2]

To improve maternal and infant health, by the year 2000...

14.1 Reduce infant mortality to no more than 7 deaths per 1,000 births (a 31% decrease)

14.5 Reduce low birth weight to no more than 5% of live births (a 28% decrease)

14.11 Increase first trimester prenatal care to at least 90% of live births (an 18% increase)

Other objectives target reducing rates of fetal death, maternal mortality, and fetal alcohol syndrome; increasing abstinence from tobacco, alcohol, cocaine, and marijuana during pregnancy; increasing the proportion of mothers who gain enough weight during their pregnancies, as well as increasing the number who breastfeed their babies; reducing severe complications of pregnancy and cesarean delivery rates; increasing the availability of preconception care and counseling, as well as of genetic services and counseling; improving the management of high risk cases; and increasing the proportion of babies who receive recommended primary care services.

Heart Disease and Stroke

Despite dramatic declines in mortality from heart disease and stroke in the past two decades, about 7 million Americans are affected by coronary artery disease, and cardiovascular diseases still cause more deaths in the United States than all other diseases combined.[51] Reductions in major risk factors—high blood pressure, high blood cholesterol, and smoking—are having a significant impact on cardiovascular mortality.

Approximately 30 percent of adults in America have high blood pressure.[58] People with uncontrolled high blood pressure are at 3 to 4 times the risk of developing coronary heart disease and as much as 7 times the risk of developing a stroke as do those with normal blood pressures.[18] Overall, blacks have a higher prevalence of high blood pressure than whites (38 percent versus 29 percent).[58] Although surveys indicate that most adults with high blood pressure are aware of their condition, only about one-quarter to a third have their blood pressure under control.[57] This remains a problem despite the fact that many can reduce their blood pressure to normal through programs of physical activity and weight loss, reduced sodium and alcohol intake, and stress management; and medications are available for those who cannot.

The National Heart, Lung, and Blood Institute regards a blood cholesterol level below 200 mg/dL as desirable.[58] Yet the mean cholesterol level for Americans is 213 mg/dL,[54] and about 60 million adults in this country are estimated to have blood cholesterol levels that place them at high risk for coronary heart disease.[84] The Coronary Primary Prevention Trial showed that men at high risk were able to reduce coronary heart disease by about 2 percent for every 1 percent lower blood cholesterol level.[40] Most people can lower their high blood cholesterol by reducing their intake of saturated fat, total fat, and dietary cholesterol, and by normalizing their weight and increasing physical activity. Medications are available for those whose blood cholesterol levels remain significantly elevated despite diet modification.

Tobacco use, which may account for as much as 40 percent of heart disease deaths among people under age 65, is discussed elsewhere. Other contributors to cardiovascular disease include obesity, physical inactivity, and diabetes mellitus.

To reduce heart disease and stroke, by the year 2000...

15.1 Reduce coronary heart disease deaths to no more than 100 per 100,000 people
(a 26% decrease)

15.2 Reduce stroke deaths to no more than 20 per 100,000 people
(a 34% decrease)

15.4 Increase control of high blood pressure to at least 50% of people with HBP
(a 108% increase)

15.6 Reduce blood cholesterol to an average of no more than 200 mg/dL
(a 6% decrease)

Other objectives target appropriate management behaviors by those with high blood cholesterol and high blood pressure; reducing dietary fat intake; reducing overweight and increasing physical activity; reducing tobacco use; increasing numbers of adults who have recently been screened for high blood pressure or high blood cholesterol; better use of worksites for detection and followup programs; and improving adherence to recommended protocols and standards for primary care providers and laboratories involved in cholesterol testing and management.

Cancer

Cancer accounts for about one of every five deaths in the United States each year.[3] About 75 million Americans now living, nearly one in three, will eventually have cancer. While the incidence of cancer has increased in the past two decades, death rates for those under 55 have fallen.[47] More people are surviving cancer now than several decades ago. Not everyone, however, has benefitted equally from this trend. Blacks are less likely than whites to survive 5 years from the time of diagnosis. The five-year survival rate for all cancer sites combined is 50 percent for white patients and 37 percent for black patients.

Once surrounded by fear and fatalism, cancer has been the focus of nationwide educational campaigns to inform the public that the risk of cancer can be significantly reduced when adequate preventive measures are taken. Tobacco has been estimated to account for 30 percent of cancers, and dietary factors roughly another 35 percent.[48] For example, most cases of lung cancer, the leading cause of cancer mortality, can be prevented by not smoking, and epidemiological research suggests that diets relatively low in fat and higher in foods containing fiber may help prevent colon, rectal, breast, prostate, and other cancers. High levels of alcohol use have been linked to esophageal and oral cancers. Limiting sun exposure, use of sunscreens and protective clothing when exposed to sunlight, and avoidance of sun lamps and tanning booths can reduce the risk of skin cancer.

Early detection also can have an important impact on cancer death rates. Procedures such as mammography and clinical breast examination, the Pap test, fecal occult blood tests, proctosigmoidoscopy, and oral, skin, and digital rectal examinations make it possible to treat cancers before they spread. For example, research suggests than breast cancer deaths could be reduced by 30 percent among women aged 50 and older through the use of mammography and clinical breast examination.[85,89,93] Yet in 1987, only 25 percent of such women had these tests within the preceding 2 years. A Pap test could reduce cervical cancer deaths by an estimated 75 percent, but one out of every five women with family incomes less than $10,000 has never had a Pap test.[53] Despite the fact that fecal occult blood testing and sigmoidoscopy are important to facilitate early diagnosis of colorectal cancer, especially among those at high risk, only 27 percent of people aged 50 and older report receiving a fecal occult blood test within the preceding 2 years.

To prevent and control cancer, by the year 2000...

16.1 Reverse the rise in cancer deaths to no more than 130 per 100,000 people

16.11 Increase clinical breast exams and mammography every 2 years to at least 60% of women aged 50 and older
(a 140% increase)

16.12 Increase Pap tests every 1-3 years to at least 85% of women aged 18 and older
(a 13% increase)

16.13 Increase fecal occult blood testing every 1-2 years to at least 50% of people aged 50 and older
(an 85% increase)

Other objectives target reducing dietary fat intake; increasing consumption of vegetables, fruits, and grain products; reducing tobacco use; decreasing sun exposure; more counseling by primary care providers on diet and tobacco use and offering of screening procedures according to established protocols; and improving the quality of Pap tests and mammograms.

Diabetes and Chronic Disabling Conditions

As the population of the United States grows older, the problems posed by chronic and disabling conditions increasingly demand the Nation's attention. Chronic conditions such as heart disease, cancer, stroke, and lung and liver disease are joined in importance by other chronic and disabling conditions, affecting people in all age groups, such as diabetes, arthritis, deformities or orthopedic impairments, hearing and speech impairments, and mental retardation.

Chronic and disabling conditions have a profound effect not only on mortality rates but also on quality of life. Disability, defined by its impact on major activities one is able to perform, affected more than 9 percent of Americans in 1988.[50] About 33 million people have functional limitations that interfere with their daily activities, and more than 9 million have limitations that prevent them from working, attending school, or maintaining a household. The underlying impairments most often responsible for these conditions are arthritis, heart disease, back conditions (including spinal curvature), lower extremity impairments, and intervertebral disk disorders.[37] For those under age 18 the most frequent causes of activity limitation are asthma, mental retardation, mental illness, and hearing and speech impairments.

Diabetes is one of the most prevalent chronic conditions among Americans. Approximately 7 million people in the United States have been diagnosed with diabetes and each year some 650,000 new cases are identified. In 1987, diabetes was the underlying cause of death for more than 37,000 Americans and contributed to over 100,000 additional deaths. According to the American Diabetes Association, in addition to death, diabetes is accountable for 30 percent of kidney failure cases, is the second leading cause of blindness in people aged 45 through 74, causes half of all nontraumatic amputations, and causes a threefold increase in risk for congenital malformations and perinatal mortality among babies of diabetic mothers. Insulin-dependent diabetes mellitus (IDDM or Type I) is the most severe form, but comprises no more than 10 percent of all cases of diabetes. Noninsulin-dependent diabetes mellitus (NIDDM or Type II), while serious, has less severe consequences, usually appears after age 40, is often associated with obesity, and may often be controlled by diet and exercise, sometimes in combination with oral hypoglycemic agents. Careful control of diabetes is critical to prevention of its complications. Diet and physical activity are important to the management of both types of diabetes, and NIDDM can often be prevented through these measures.

To reduce diabetes and chronic disabling conditions, by the year 2000...

17.2 Reduce disability from chronic conditions to no more than 8% of people (a 15% decrease)

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people (an 11% decrease)

Other objectives target reducing reducing complications of diabetes; reducing disability from asthma, chronic back conditions, osteoporosis, hearing impairment, vision impairment, and mental retardation; increasing physical activity; reducing overweight; improving early diagnosis and referral for disabling conditions among the very young and older people; improving community and self-help resources for people with chronic and disabling conditions; and improving employer policies related to the needs of people with disabilities.

HIV Infection

The human immunodeficiency virus (HIV) epidemic is a multifaceted national and international problem. People with HIV infection can develop acquired immunodeficiency syndrome (AIDS), including severe opportunistic infections, Kaposi's sarcoma, and multiple-system medical complications. Without treatment about 50 percent of people develop AIDS within 10 years of becoming infected with HIV, and another 40 percent or more develop other clinical illnesses associated with HIV infection.[29] By the end of 1989, reported cases of AIDS had reached 115,000,[12] but the projected figure is expected to more than triple or quadruple by the end of 1993. It has become the seventh leading cause of potential years of life lost in the United States. By the end of 1993, a projected total of 390,000 to 480,000 cases of AIDS will have been diagnosed in the United States and 285,000 to 340,000 people will have died from the disease.[14] Annual costs of AIDS are projected to climb as high as $5 to $13 billion by 1992.[14,43]

An estimated 1 million people in the United States are infected with HIV and of these approximately 40,000 became infected in 1989. Groups at special risk have been identified and include: intravenous drug abusers and their sex partners; people with large numbers of sex partners; men who have sex with men, and their female partners; and people who exchange sex for money or drugs. Of current AIDS patients, more than three-fourths are male, and two-thirds are male homosexuals and bisexuals; but the most rapid increases are occurring among intravenous drug-abusers, women, and babies born to women in high risk groups. An estimated 20 to 35 percent of infants of infected mothers develop HIV infection. Approximately 60 percent of AIDS patients are white, 25 percent are black, and 15 percent are Hispanic.[12]

Although some therapeutic agents may extend survival, there is currently no available treatment to prevent death among people with AIDS. The survival rate in the early 1980s was only about 15 percent, before the licensure of antiviral drugs, such as zidovudine (AZT). AZT has been shown to slow replication of the virus and improve survival prospects, as have selected other agents now under study.

The development of a safe and effective HIV vaccine is a high priority for the coming decade, although the prospects for the availability of such a vaccine are uncertain. Other prevention and control strategies are vital to stopping the spread of HIV infection. Most HIV-infected people in the United States do not know they harbor the virus, and increased counseling, testing, and follow-up services are needed. Public education efforts on risks and precautions are essential to slowing the spread of the disease.

To prevent and control HIV infection, by the year 2000...

18.2 Confine HIV infection to no more than 800 per 100,000 people

Other objectives target reducing experience with sexual intercourse among adolescents; increasing use of condoms among sexually active, unmarried people; increasing outreach and access to treatment programs for intravenous drug abusers; expanding testing and counseling for people at risk of HIV infection, including improved skills among primary care providers; increasing education in schools and colleges about HIV infection and its prevention; and extension of regulations to protect workers at risk for occupational transmission of HIV.

Sexually Transmitted Diseases

Sexually transmitted diseases affect almost 12 million Americans each year, 86 percent of whom are aged 15 through 29.[11] About one-fifth of all young people, by the time they reach 21, have needed treatment for a sexually transmitted disease.[94] Because only some teenagers are sexually active, this amounts to an effective rate of at least 25 percent among those who are. The sexually transmitted diseases encompass more than 50 recognized organisms and syndromes, including, in addition to syphilis and gonorrhea, *chlamydia trachomatis* infections, genital herpes, hepatitis B, chancroid, cytomegalovirus, and human immunodeficiency virus (HIV). After AIDS, the most serious complications of sexually transmitted diseases are pelvic inflammatory disease (PID), sterility, ectopic pregnancy, blindness, cancer associated with human papillomavirus, fetal and infant death, birth defects, and mental retardation. The total societal cost of sexually transmitted diseases exceeds $3.5 billion annually, with the cost of PID and PID-associated ectopic pregnancy and infertility alone exceeding $2.6 billion.[94]

Gonorrhea is the most frequently reported communicable disease in the United States. In 1989, some 733,000 cases were reported and the incidence was an estimated 300 per 100,000 people. Youth, low-income, and minority populations are at particular risk. In 1989, adolescents aged 15 through 19 had an infection rate of 1,125 per 100,000 and blacks a rate of 1,990 per 100,000. Despite the fact that since 1981, cases of gonorrhea in males have declined 29 percent and declined 24 percent in females, the rates have not declined among racial and ethnic minorities or among teenagers. Furthermore, the percent of all gonorrhea organisms that are antibiotic-resistant grew from less than 1 percent in 1985 to 7 percent in 1989.[10]

In 1989, nearly 45,000 cases of syphilis were also reported. Syphilis is the first sexually transmitted disease for which control measures were developed and tested. Since the initiation of Federal assistance for syphilis control in the 1940s, reported cases of all stages of syphilis declined from an all-time high of 575,600 cases in 1943 to fewer than 68,000 cases in 1985. In recent years, however, the number of syphilis cases has increased dramatically, due in part to an increase in the exchange of sex for drugs, to an increased number of crack cocaine users, and to increased sexual activity among adolescents. Between 1986 and 1989, the number of reported syphilis cases increased over 55 percent, to the highest level in the United States since the early 1950s.[10]

To reduce sexually transmitted diseases, by the year 2000...

19.1 Reduce gonorrhea infections to no more than 225 per 100,000 people (a 25% decrease)

19.3 Reduce syphilis infections to no more than 10 per 100,000 people (a 45% decrease)

Other objectives target reducing infections with *chlamydia trachomatis*, genital herpes and genital warts, and hepatitis B; reducing occurrence of pelvic inflammatory disease; increasing use of condoms among sexually active, unmarried people; fuller availability of comprehensive sexually transmitted disease-related services in clinics and centers that provide family planning, maternal and child health care, drug treatment, and primary care to low income families; increasing partner tracing and notification; improving primary care provider management of STD cases; and inclusion of instruction on STD transmission and prevention as part of school health education for middle and secondary school students.

Immunization and Infectious Diseases

The reduction in incidence of infectious diseases is the most significant public health achievement of the past 100 years. This success is most notably embodied in the global eradication of smallpox, achieved in 1977. Other gains in control of infectious diseases are nearly as striking, including the virtual elimination of diphtheria and poliomyelitis in the United States. Much of the progress made has been a result of improvements in basic hygiene, food production and food handling, and water treatment. The development and use of antimicrobial drugs have reduced the morbidity and mortality associated with a number of infectious diseases. The other major factor in reducing the toll from infectious diseases has been the development and widespread use of vaccines, which are among the safest and most effective measures for the prevention of infectious diseases.

Nevertheless, infectious diseases still cause many preventable illnesses and deaths. Influenza and pneumonia, for example, shorten the lives of many older adults despite the availability of vaccines. Approximately 80 to 90 percent of all influenza-associated deaths in the United States occur in people 65 years or older.[9] The childhood vaccine-preventable diseases, although they have declined dramatically, remain problems among certain high-risk, under-immunized groups. Moreover, newly recognized diseases, such as Legionnaire's disease, toxic shock syndrome, Lyme disease, and the wide spectrum of diseases associated with human immunodeficiency virus infection, have emerged as threats to public health.

The occurrence of measles in the United States is an example of an infectious disease problem that should be readily controlled in that a vaccine has been available since 1963. Use of that vaccine helped to reduce the number of reported measles cases in this country to an all-time-low of under 1,500 in 1983. However, due to inadequate immunization of low-income preschool children, as well as of young people, the disease has demonstrated a resurgence in susceptible populations, with over 16,000 cases reported in 1989, including 41 deaths.[42] In response, the measles immunization protocol recommended by the Immunization Practices Advisory Committee now calls for a two-dose schedule of measles vaccine, but effective control will also require better outreach in low-income communities, continued strong enforcement of school entry laws, and efficient identification and intervention in disease outbreaks.

To increase immunization and prevent infectious diseases, by the year 2000...

20.1 Eliminate measles

20.2 Reduce epidemic-related pneumonia and influenza deaths to no more than 7.3 per 100,000 people aged 65 and older
(a 20% decrease)

20.11 Increase childhood immunization levels to at least 90% of 2 year-olds
(a 20% increase)

Other objectives target eliminating indigenous cases of diphtheria, tetanus, polio, and rubella; reducing viral hepatitis, tuberculosis, bacterial meningitis; reducing infectious diarrhea among children in licensed child care centers; reducing middle ear infections; increasing immunization levels for pneumococcal pneumonia and hepatitis B; expanding immunization laws for schools, preschools, and child care settings; eliminating financial barriers to immunizations; fully involving primary care providers in meeting the immunization needs of their patients; and expanding laboratory capabilities for rapid viral diagnosis of influenza.

Clinical Preventive Services

Clinical preventive services refer to those disease prevention and health promotion services—immunizations, screening, and counseling—delivered to individuals in a health care setting. The effectiveness of preventive services in reducing disease, disability, and premature death is now well documented. The dramatic declines observed for childhood infectious diseases and early death from strokes and cervical cancer are largely attributed to the widespread application of three preventive services: childhood immunizations, high blood pressure detection and control, and Pap tests. Several other preventive services, such as screening mammography, have also been shown to be effective. In 1989, the U.S. Preventive Services Task Force reported on its review of the scientific evidence on 169 clinical preventive services for 60 target conditions. Based on well-established criteria, it published in the *Guide to Clinical Preventive Services*[92] its recommendations on the basic services that should be provided.

Despite their proven effectiveness, clinical preventive services are rarely covered under health insurance or delivered as recommended. The few studies that have examined the receipt of clinical preventive services have found the delivery to be less than optimal. For example, although 93 percent of newborns studied had received at least one well-child examination, less than half had received three or more doses of diphtheria-pertussis-tetanus (DPT) vaccine and three or more doses of polio vaccine by age 18 months.[41] The National Health Interview Survey found an increase in the use of eight routine preventive services among adults and children between 1973 and 1982, but low-income people, people with low levels of education, and people of Hispanic origin were among the least likely to have ever received all eight procedures.[19] A related study found that only 42 percent of women had adequately received a blood pressure check, clinical breast examination, Pap test, and glaucoma screening.[96] Screening was less adequate among the poor, the less educated, and those living in rural areas, with only 33, 34, and 38 percent, respectively, screened for all four conditions.

Barriers specific to the delivery or use of preventive services include uncertainty among health care providers about which services to offer, practice organization characteristics that are not conducive to delivery of preventive services (e.g., lack of time, too few allied health professionals, and limited access to medical record systems organized for prevention), and inadequate knowledge among consumers to create the necessary demand. Another important barrier is the lack of reimbursement or financing. In addition to the fact that few insurance plans cover preventive services, a substantial proportion of Americans—some 30 to 37 million—are without any form of health insurance. And many more are underinsured or are covered by insurance programs with requirements and payments that providers are increasingly reluctant to accept.

To expand access and use of clinical preventive services, by the year 2000...

21.4 Eliminate financial barriers to clinical preventive services

Other objectives target increasing the proportion of people with a specific source of ongoing primary care; increasing primary care providers' delivery of recommended preventive services; increasing the number of people who receive recommended clinical preventive services; increasing delivery of preventive services to patients of publicly funded providers of primary care; and increasing representation of minorities among primary care providers.

Surveillance and Data Systems

Surveillance and Data Systems

Systematically collecting, analyzing, interpreting, disseminating, and using health data is essential to understanding the health status of a population and to planning effective prevention programs. Public health surveillance and data systems collect information on morbidity, mortality, disability, injuries, risk factors, services, and costs. Systems used in the United States include vital statistics and disease reporting systems as well as sample surveys, such as the continuous National Health Interview Survey (NHIS).

Although the United States Public Health Service takes the lead role in national public health data collection, it is only one partner within the larger structure necessary to collect national public health data. Surveillance often requires active cooperation among Federal, State, and local agencies. For example, the National Vital Statistics System obtains information on births, deaths, marriages, and divorces from all 50 States, New York City, the District of Columbia, Puerto Rico, the United States Virgin Islands, and Guam. Programs in each State collect vital information from many sources in local communities, including funeral directors, medical examiners, coroners, hospitals, religious authorities, and justices of the peace. Other surveys, like the National Health Interview Survey, are based on interviews with thousands of individual citizens nationwide. Still others, like the Centers for Disease Control's Behavioral Risk Factor Surveillance System, are based on State reports of telephone interviews with individual citizens.

The Institute of Medicine's report, *The Future of Public Health*, recognized the importance of surveillance and data systems for guiding public health into the 21st century, in recommending the creation and use of methods for the collection of "...national data that will permit comparison of local and State health data with those of the Nation and of other States and localities and that will facilitate progress towards the national health objectives..."[31] The development and dissemination of comparable procedures for data collection would facilitate comparability of data on health status within and among State and local areas and would permit the valid comparison of local and State health data with national data. In addition, the development of a small set of common health indicators, arrived at through a consensus process, would facilitate communication among public health officials and with others involved in programs and activities that affect the Nation's health (e.g., employers and school administrators). Though complete comparability across data systems is not possible given the differences in purposes and approaches (e.g., direct interviews v. telephone v. mail), differences can be minimized.

To improve surveillance and data systems, by the year 2000...

22.1 Develop and implement common health status indicators for use by Federal/State/local health agencies

Other objectives target creation of data sources to track the year 2000 objectives; expanded State-based activity to track the progress of the population toward the year 2000 objectives; improvement of related data for blacks, Hispanics, American Indians and Alaska Natives, Asian Americans, and people with disabilities; improvement of information transfer capabilities among Federal, State, and local agencies; and more speedy processing of survey and surveillance data.

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6. Shared Responsibilities

The challenge set out through *Healthy People 2000* is one directed to people throughout the Nation. Each of us, whether acting as an individual, an employee or employer, a member of a family, community group, professional organization, or government agency, has both an opportunity and an obligation to contribute to the effort to improve the Nation's health profile. To arrive at the established goals and objectives, we must chart a common course that depends upon commitment and action from every level of our society. Then the challenge can be met.

Personal Responsibility

The individual is both the starting point and the ultimate target of the campaign towards *Healthy People 2000*. Through the many roles that each of us fulfills in our daily lives, we are afforded numerous opportunities for promoting health and preventing disease. With these opportunities, though, comes responsibility, and the first role we must all undertake is responsibility for our own personal health habits. Improving personal health behavior can count among the most potent means to prevent disease and promote health. Measurable decreases in risks to health can result from changes in diet, exercise, tobacco use, alcohol and other drug use, injury prevention behavior, and sexual habits, but each of us must choose to make these changes a personal priority.

Our worksites can provide a smoking cessation program and a fitness center, for example, but we have to enroll. Fast food chains can offer salads, but we have to choose them. Legislators can mandate food labeling, but we must care enough to read the labels. Our health care providers can provide the necessary screening tests and immunizations, but we must take the initiative to obtain them.

While the responsibility for change lies with each of us, it also lies with all of us, and individuals cannot be expected to act alone.

The Family

The family is the primary context in which health promoting activities occur and is therefore potentially the most immediate source of health-related support and education for the individual. It is in the context of the family that attitudes and behaviors regarding diet, physical activity, hygiene, smoking, and alcohol and other drug use are often learned and maintained. Therefore, the family offers the primary opportunity for change in these areas. Parents can teach children healthy habits and offer the supportive environment necessary to sustain them. In addition, parents can ensure that their children receive needed preventive services—immunizations, screening tests, as well as counseling and education about health risks and behaviors.

Although the family plays a key role in meeting the challenge of *Healthy People 2000*, the family also should not be expected to assume these responsibilities in isolation. Families need and deserve the support of their communities in achieving and maintaining standards of good health. When families experience stresses that can result in self-destruction through abuse, neglect, and addiction, the community's responsibility becomes increasingly urgent. Single-parent homes, children in poverty, and an aging society are all factors that threaten the family's viability. As the burdens of a family increase, its very spirit is threatened and the need for community support becomes still more crucial, not only to the well-being of its members but also to its survival.

Community

In today's society, a supportive community can make a vital difference in the well-being of its members. Accordingly, there is evidence that community-based health programs can play a strong role in improving the health status of their citizens. Multiple opportunities exist for community health promotion efforts on the part of government, voluntary and self-help groups, businesses, and schools. Such local community programs are often more efficient than centralized programs managed far from the point of delivery. Furthermore, indigenous programs maintain the sensitivity to family and neighborhood values that is vital to encourage change successfully towards healthier lifestyles within the community.

Local health officials can contribute to the challenge of *Healthy People 2000* by working to ensure that health department clinics provide appropriate preventive and health promotion services for the people they serve—in addition to their historic roles of providing and monitoring traditional community health services related to public sanitation, clean water, and water fluoridation. Local governments can form partnerships with grassroots organizations, such as neighborhood associations and tenant councils, in a cooperative effort to reach specific populations on topics of special local concern.

Voluntary organizations have long worked to improve health through research, public education, and other program activities. In fact, the spirit of volunteerism is one of our strongest national traditions. Groups that have not traditionally been involved in reducing health risks should now begin to define their role in community health education. For example, local organizations serving youth can collaborate on alcohol and other drug abuse-reduction programs or on discouraging the use of tobacco. Groups representing special populations—people with disabilities, racial and ethnic minorities, older people—can work together to achieve needed changes both within their memberships and in the community at large.

Business, community leaders, and labor can work together for mutual benefit to enhance the well-being of employees and the community. Management, unions, and employee groups can sponsor wellness and employee assistance programs; coverage for effective preventive services can be sought in contract negotiations; and employees can work to make community health promotion services available at the worksite for themselves, their dependents, and retirees. Many important disease prevention and health promotion activities, such as smoking cessation, diet modification, and physical conditioning, can be accomplished at the worksite in an effective and efficient manner. Company policies can help create a healthy work and living environment and contribute to the ecology of the communities in which they are based. From enforcing safety procedures, to mandating smoke-free workplaces, to ensuring that healthful food choices are available in employee cafeterias, employers have multiple opportunities to improve the health prospects of their employees. Companies also have a responsibility to contribute to the community leadership in maintaining a healthy environment through responsible waste disposal policies.

Schools have a special role in enhancing and maintaining the health of their community's children, since roughly one-quarter of a young person's time is spent in this environment. School health education can foster healthful behaviors and help prevent hazardous ones, particularly in the areas of physical fitness, smoking, and nutrition. Standard course curricula can be modified to include health promotion, as, for example, through the addition of environmental health components to science classes. Provision of healthy meals, safe work and play areas, and physical education courses that stress the acquisition of lifetime exercise habits can be instituted as well to foster the long-term health of our youth. In partnership with parents and other community groups, schools can help to create health promotion programs and enhance health education curricula. Schools can, in addition, open their facilities and health curricula to the adults of the community, thereby serving as an even greater local resource.

Churches and other religious institutions may also offer important resources for enhancing access to health promotion and disease prevention services, especially for populations that may otherwise be difficult to reach. Churches are often strong in the same communities where the health care system is weak and overburdened. In poor black communities, for example, the church has met not only the spiritual but also the educational, physical, and social needs of its members and their families and friends. Increasingly, religious institutions are sponsoring health fairs and establishing blood pressure education, screening, and control programs. They offer individual and family counseling and are often involved in adolescent pregnancy prevention efforts. These are important contributions.

Health Professionals

Responsibility also falls to physicians and other health care providers, who are for many Americans the primary sources of health information. Their professional training gives them the skill to translate science into practice. Practice can take the form of partnerships with nonprofessionals in the pursuit of individual, family, and community health care. The effectiveness and efficiency of preventive services—screening tests, immunizations, and counseling—will be enhanced by such partnerships.

Health education and counseling, in particular, provide opportunities for interdisciplinary consulting among educators, administrators, social workers, health and other professionals in order to integrate healthy practices into the daily lives of individuals, their families, and communities. Professional associations can facilitate dissemination of the health promotion and disease prevention knowledge base through their established information exchange and professional education networks. A special opportunity and responsibility exists for the teachers of health professionals to design curricula and allocate educational resources which will equip health-related professions with prevention expertise and with the skills to share their knowledge with the public.

America's physicians, dentists, nurses, pharmacists, medical technicians and other health professionals must be not only knowledgeable in the basic and clinical sciences; they also must be life-long learners, excellent communicators, good team players, managers of scarce resources, health care visionaries, and community leaders. The day of the solo practitioner, dealing with the patient in isolation from other professionals is past.

Media

The day of the print and electronic media is, however, very much here, and these media can contribute to the exchange of health information between health professionals and the public, as well as among health professionals themselves. The average American is exposed to many different kinds of health-related messages, some explicit in news, public affairs, and documentaries, and some buried in the plots and characters seen in entertainment programs through the mass media. In partnerships with the media, voluntary and professional organizations can expand the reach of their programs while performing an important service to the community.

Partnerships can also be created between community groups and the increasing number of cable television stations, radio stations, and regional magazines that are aimed at very specific audiences and therefore have a unique opportunity to tailor their messages directly to the target audience. New opportunities will also unfold through the evolving integration of telecommunications media—telephone, television, computer—to make customized health information more accessible than ever before.

Government

Policy decisions are made regularly that can assist health professionals and the public in reaching our national health goals. These decisions range from health care legislation to legislation that bears on the environment, business, farming, production, energy, housing, information dissemination, education, and the economy. The health interests of Americans are directly and indirectly shaped by such policy decisions. Local, State, and Federal governments can ensure that health promotion and disease prevention activities receive adequate attention and support. The accomplishment of this task can be effectively bridged through partnerships with each other and with the private sector.

With the increasing decentralization of government health services, the States have taken on new roles as conveners, fostering alliances and common interests among many potential participants in disease prevention and health promotion activities. These alliances can occur both horizontally, among statewide organizations, and vertically, among community, State, and national groups. Particularly important is their role in maintaining surveillance systems on the occurrence of disease, exposure to risks, and delivery of services. They are in this respect the keepers of the tools most important to charting our progress.

The Federal Government supports basic biomedical research on disease prevention and sponsors demonstration projects to help identify effective health promotion strategies. It provides financial support for many State and local government initiatives in health promotion and disease prevention, and directly serves some of the population groups most in need. On issues of particular prominence, it sponsors the development of national educational campaigns and the formation of coalitions for action. In order to address public health issues that are in flux with changing social, behavioral, and economic environments, sustained Federal leadership is necessary to improve the health of the American people.

Healthy People: The Vision

Clearly, to meet the challenge of the *Healthy People 2000* goals and objectives, we must work both individually and collectively. Alone, no one person, family, business, organization, or government has the resources to bring about the changes needed to implement this broad program, and yet the program cannot succeed unless each of us contributes individually. In essence, *Healthy People 2000* offers hope that through cooperative efforts all Americans can live longer, healthier lives.

There are existing examples of cooperative programs which, if replicated, could propel us toward our health goals for the year 2000. Promising efforts are emerging in programs that have taken deep roots in neighborhoods across America and focus upon the early developmental needs of children. In many areas, these programs are the chief, if not the only, agents of family and community. Through these efforts, parents can both receive support and become active participants and leaders within the community. Where such programs are successful, they demonstrate that by working together—by mobilizing families, neighborhoods, schools, businesses, churches, the media, and government—we can make great strides toward helping Americans become healthier, more productive, and more fulfilled.

Thus, the final message of this report is one of shared responsibility—among the many partners in prevention. It is what we do collectively and personally that will move us as individuals and as a Nation towards a healthier future.

Part II

National Health Promotion and Disease Prevention Objectives

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Introduction to Healthy People 2000: The Objectives

Measurable objectives that set out targets to be achieved by 2000 are the substance of this document. The foremost principle in the formulation of these objectives is that they are *national*—as distinct from Federal—in scope. They are meant to reflect the potential accomplishments of improvements sponsored at every level and in many sectors. Part II lays out each of the objectives, organized by priority area, and provides explanatory commentary for each. These objectives have been over 3 years in development, beginning in 1987 with a series of public hearings across the Nation and ultimately involving thousands of individuals in the process. From the beginning, their development has been guided by the following principles:

- **Credibility**—Objectives should reflect available scientific evidence on potential health benefits, be realistic, and address the issues of greatest priority.
- **Public comprehension**—Objectives should be understandable and relevant to a broad audience, including those who plan, manage, deliver, use, and pay for health services.
- **Balance**—Objectives should include both outcome and process measures, recommending methods for achieving changes and setting standards for evaluating progress.
- **Measurability**—Objectives should be quantified.
- **Continuity**—Objectives should be linked to the 1990 objectives where possible, but reflect the lessons learned in implementing them.
- **Compatibility**—Objectives should be compatible where possible with goals already adopted by Federal agencies and health organizations.
- **Freedom from data constraints**—Availability or form of data should not be the principal determinant of the nature of the objectives. Alternate and proxy data may be used where necessary, but commitment to track in the future must be made.
- **Responsibility**—Objectives should reflect the concerns and engage the participation of professionals, advocates, and consumers, as well as State and local health departments.

The objectives that follow are organized broadly into three major sections which define the principal type of preventive intervention they involve. Those sections are Health Promotion, Health Protection, and Preventive Services. There are a total of 21 priority areas under those major categories, plus one additional priority that cuts across all categories and addresses Surveillance and Data Systems. In addition, because issues and approaches vary by age, a summary of the age-related objectives is presented for each of four age groups: children, adolescents and youth, adults, and older adults. Objectives listed in these sections have been collected from throughout the priority areas.

The priorities are numbered to facilitate reference and use. *The numbers do not indicate a rank ordering of priorities.* With the exception of the priority area on Surveillance and Data Systems, objectives are organized in three types:

- **Health Status**—Objectives to reduce death, disease, and disability.
- **Risk Reduction**—Objectives to reduce the prevalence of risks to health or to increase behaviors known to reduce such risks.
- **Services and Protection**—Objectives to increase comprehensiveness, accessibility, and/or quality of preventive services and preventive interventions.

In some cases, graphs accompany the explanatory commentary, depicting observed statistical trends in relation to the target set for 2000. Four sections at the end of each priority area address Personnel Needs, Surveillance and Data Needs, Research Needs, and Related Objectives From Other Priority Areas. Finally, references are provided for the baseline data sources and for the literature used in developing explanatory commentary.

Special Population Targets

Part I of *Healthy People 2000* discusses the importance of focusing attention on high risk population groups. It lays out as one of the three health goals for the Nation the elimination of health disparities between those groups and the population as a whole. The objectives support that theme by setting special population targets where a group has shown high risk of disease or disability. High risk may be defined simply in terms of worse rates than those of the overall population; it may also be a function of a differing trend, which suggests cause for special concern, even though rates are still worse than or even with the overall population. Where data are unavailable to know what the current level of risk is, special population targets have not been set. Where targets are set, they attempt to balance two criteria: they are meant to be realistic and thus may not be set to achieve complete equity by 2000; and they are meant to be challenging and thus will generally call for proportionately greater improvements than do the targets for the total population. A small graph accompanies the special population targets to allow comparison of the percentage improvements of the overall and special targets.

Physical Activity and Fitness

1

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1. Physical Activity And Fitness

Introduction

Evidence of the multiple health benefits of regular physical activity continues to mount. Regular physical activity can help to prevent and manage coronary heart disease, hypertension, noninsulin-dependent diabetes mellitus, osteoporosis, obesity, and mental health problems (e.g., depression, anxiety).[16] Regular physical activity has also been associated with lower rates of colon cancer[31] and stroke[34] and may be linked to reduced back injury.[7] On average, physically active people outlive those who are inactive.[27] Regular physical activity can also help to maintain the functional independence of older adults and enhance the quality of life for people of all ages.[18]

Because coronary heart disease is the leading cause of death and disability in the United States, the potential role of physical activity in preventing coronary heart disease is of particular importance. Physically inactive people are almost twice as likely to develop coronary heart disease as people who engage in regular physical activity.[32] This is only slightly less than the relative risk for such well-known risk factors as cigarette smoking, high blood pressure, and high blood cholesterol. Furthermore, more people are at risk for coronary heart disease due to physical inactivity than for any other single risk factor, and those with other risk factors for coronary heart disease, such as obesity and hypertension, may particularly benefit from physical activity.

Increasing evidence suggests that light to moderate physical activity, below the level recommended for cardiorespiratory fitness, can have significant health benefits, including a decreased risk of coronary heart disease.[21,33] For the inactive, even relatively small increases in activity are associated with measurable health benefits. In addition, light to moderate physical activity is more readily adopted and maintained than vigorous physical activity. Therefore, compared to the 1990 objectives, the year 2000 objectives place greater emphasis on reducing inactivity and increasing light to moderate physical activity.

The relationships between physical activity and health are numerous and complex.[8] Many different physiologic and physical effects are associated with the many different types of physical activities that a person can choose to do. While it is unclear what exact types and amounts of physical activity are required for precise health benefits, several health-related dimensions of physical activity are thought to be most important in producing selected health effects.[8] The year 2000 objectives are proposed to ensure that health-related dimensions of physical activity that encompass key physiologic and physical mechanisms become part of regular behavioral patterns.

For example, Objective 1.3 addresses the dimension of physical activity associated with energy or caloric expenditure which results in energy utilization, thereby enhancing weight loss or control. Pursuing activities that result in energy expenditure may also produce physiologic changes that favorably affect blood pressure, platelet aggregation and fibrinolysis, and glucose tolerance, thereby helping to prevent or manage coronary heart disease and diabetes mellitus.[20] Objective 1.4 addresses aerobic intensity which increases the ability of the cardiorespiratory and other systems to do physical work, but may also have an additional beneficial influence on preventing cardiovascular disease. Objective 1.6 addresses muscular strength, muscular endurance, and flexibility which are important because they may protect against disability and, therefore, may serve to ensure regular physical activity participation. As research continues to elucidate the links between physical activity and selected health outcomes, individuals will be able to increasingly select physical activity patterns optimally suited to individual health risks and physiologic benefits as well as to individual preferences.

Unfortunately, few Americans engage in regular physical activity despite the potential benefits. Less than 10 percent of the U.S. adult population exercises at the level recommended by the 1990 objectives: "exercise which involves large muscle groups in dynamic movement for periods of 20 minutes or longer, 3 or more days per week, and which is performed at an intensity of 60 percent or greater of an individual's cardiorespiratory capacity."[9] Less than half the adult population exercises 3 or more days per week for 20 minutes or longer regardless of intensity or dynamic movement of large muscle groups. The prevalence of physical inactivity increases with advancing age especially during adolescence and early adulthood.

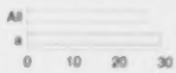
Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

1.1* **Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)**

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
1.1a	**Blacks**	**163**	**115**



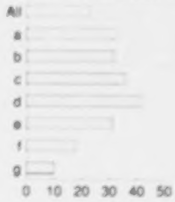
Baseline data source: National Vital Statistics System (special analysis), CDC.[35,36]

*For commentary, see Objective 15.1 in *Heart Disease and Stroke*. This objective also appears as Objective 2.1 in *Nutrition* and as Objective 3.1 in *Tobacco*.

1.2* **Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)**

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
1.2a	**Low-income women aged 20 and older**	**37%**	**25%**
1.2b	**Black women aged 20 and older**	**44%**	**30%**
1.2c	**Hispanic women aged 20 and older**		**25%**
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
1.2d	**American Indians/Alaska Natives**	**29-75%**[§]	**30%**
1.2e	**People with disabilities**	**36%**[+]	**25%**
1.2f	**Women with high blood pressure**	**50%**	**41%**
1.2g	**Men with high blood pressure**	**39%**	**35%**



[†] *Baseline for people aged 20-74*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation.[19] BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

Baseline data sources: National Health and Nutrition Examination Survey (NHANES), CDC; Hispanic Health and Nutrition Examination Survey, CDC; Indian Health Service; for people with disabilities, National Health Interview Survey, CDC.

*For commentary, see Objective 2.3 in *Nutrition*. This objective also appears as Objective 15.10 in *Heart Disease and Stroke* and as Objective 17.12 in *Diabetes and Chronic Disabling Conditions*.

Risk Reduction Objectives

1.3* **Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)**

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

Baseline data source: Behavioral Risk Factor Surveillance System, CDC.

Physical activity is defined as any bodily movement produced by skeletal muscles that results in caloric expenditure.[11] Caloric expenditure utilizes energy. Energy utilization enhances weight loss or control and is important in preventing and managing obesity, coronary heart disease, and diabetes mellitus. Engaging regularly in light to moderate physical activity for at least 30 minutes per day will help to ensure that calories are expended and confer health benefits.[21,33] For example, daily physical activity equivalent to a sustained walk for 30 minutes per day would result in an energy expenditure of about 1050 Calories per week (1.5 miles X 100 kcal per mile X 7 days per week = 1050 kcal per week). If caloric intake remains constant, this would translate into a weight loss of roughly one-third pound per week. Furthermore, epidemiologic studies suggest that a weekly expenditure of 1000 Calories could have significant individual and public health benefit for coronary heart disease prevention, especially for those who are originally sedentary.[20]

A minimum level of intensity for light to moderate physical activity is set by the example of a sustained walk. This level of activity is feasible for most people. Those willing and able can perform even more vigorous types of physical activity for the purpose of improving and/or maintaining cardiorespiratory fitness (see Objective 1.4). However, light to moderate activities confer considerable health benefit, are more likely to be adopted and maintained than intense activities, and are less likely to result in injury.[30]

Although light to moderate physical activity for a sustained period of at least 30 minutes is preferable, intermittent physical activity also increases caloric expenditure and may be important for those who cannot fit 30 minutes of sustained activity into their schedules. The point is to encourage physical activity as part of a daily routine. People engaging in light to moderate physical activity less often than daily also receive health benefits, but if the frequency falls below three days per week, they may be less likely to maintain a regular pattern of activity over time.[3]

Most Americans engage in less physical activity than is proposed by this objective. Currently only 22 percent of people aged 18 and older engage in at least 30 minutes of activity 5 or more times per week and only 12 percent report that they are this active 7 or more times per week. Similar rates prevail for older adults and low-income individuals.

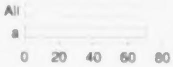
Increasing public awareness about the many benefits of light to moderate physical activity could help to attain this objective. For example, Americans need to recognize the importance of daily physical activity to weight management, to know that walking is a form of exercise most people can do, and to understand that one needs to remain active throughout life. It is also important for people to realize that starting out slowly, and gradually increasing the frequency and duration of their physical activity over time is the key to successful behavior change.[2] In the case of walking, the message becomes "if you are not used to daily walking, then walk slowly and take short, frequent walks, gradually increasing distance and speed." Educational messages should be appropriately tailored to reach older adults, people with disabilities, and racial and ethnic minorities.

For young children, attaining this objective will require public awareness messages targeted to parents. Parents should be encouraged to exercise with their children (e.g., daily family walks), to advocate for daily school physical education (see Objective 1.8), and to involve their children in the physical activity programs of community organizations.

*This objective also appears as Objective 15.11 in *Heart Disease and Stroke* and as Objective 17.13 in *Diabetes and Chronic Disabling Conditions*.

1.4 **Increase to at least 20 percent the proportion of people aged 18 and older and to at least 75 percent the proportion of children and adolescents aged 6 through 17 who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 12 percent for people aged 18 and older in 1985; 66 percent for youth aged 10 through 17 in 1984)**

Special Population Target

	Vigorous Physical Activity	*1985 Baseline*	*2000 Target*	*Percent Increase*
1.4a	**Lower-income people aged 18 and older (annual family income <$20,000)**	7%	12%	

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

Baseline data sources: For people aged 18 and older, the National Health Interview Survey, CDC; for youth aged 10 through 17, the National Children and Youth Fitness Study I, ODPHP.

Regular vigorous physical activity helps achieve and maintain higher levels of cardiorespiratory fitness than light to moderate physical activity. Cardiorespiratory fitness or aerobic capacity describes the body's ability to perform high intensity activity for a prolonged period of time without undue stress or fatigue. Having higher levels of cardiorespiratory fitness helps enable people to carry out their daily occupational tasks and leisure pursuits more easily.

The vigorous physical activities that help to achieve and maintain cardiorespiratory fitness can also contribute substantially to caloric expenditure, and probably provide additional protection against coronary heart disease over less vigorous forms of regular physical activity.[5,28] Vigorous physical activities include brisk walking, jogging/running, lap swimming, cycling, dancing, skating, rowing, jumping rope, cross-country skiing, hiking/backpacking, racquet sports, and competitive group sports (soccer, basketball, volleyball). Activities such as stair climbing; strenuous housework, yardwork, and occupational tasks; and children's games (tag, kickball) and other childhood pursuits may also qualify as vigorous activities if they are sustained and elevate the heart rate to at least 60 percent of the maximum heart rate for age.

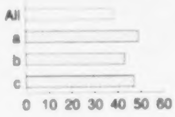
Higher levels of cardiorespiratory fitness can be achieved by increasing the frequency, duration, or intensity of activity over that suggested in this objective (i.e., more than three times per week or more than 20 minutes per session or at a higher intensity), but the relationship is not linear. Progressively larger increases in frequency, duration, or intensity are needed to induce a steady increase in cardiorespiratory fitness. The frequency of musculoskeletal injury also rises with more frequent, prolonged, and intense activity.[30]

This objective is designed to encourage vigorous physical activity participation for at least three times per week. Unfortunately, those that meet the minimal frequency and duration proposed in this objective may secure a strong cardiorespiratory system, but they may not achieve the weight control or physiologic benefits secured by daily activity (see Objective 1.3). On the other hand, daily vigorous physical activity performed for 30 minutes per day will surely provide daily energy expenditure, but there is also an increased injury risk.[30] Therefore, vigorous physical activity should be incorporated into the daily activity pattern proposed in Objective 1.3 in a manner that will not result in injury.

Monitoring progress toward this objective must take into account the decline in maximal cardiorespiratory capacity with age.[6] A method for this has been developed and used in surveys that obtain information about physical activities performed without measuring pulse rates.[10]

1.5 **Reduce to no more than 15 percent the proportion of people aged 6 and older who engage in no leisure-time physical activity. (Baseline: 24 percent for people aged 18 and older in 1985)**

Special Population Targets

	No Leisure-Time Physical Activity	*1985 Baseline*	*2000 Target*	*Percent Decrease*
1.5a	**People aged 65 and older**	**43%**	**22%**	
1.5b	**People with disabilities**	**35%**†	**20%**	
1.5c	**Lower-income people (annual family income <$20,000)**	**32%**†	**17%**	

†*Baseline for people aged 18 and older*

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

Baseline data source: National Health Interview Survey, CDC.

Although the protective effect of a more active lifestyle is seen for both occupational and leisure-time physical activity, the amount of physical activity at work and in the home has declined steadily. For most people, the greatest opportunity for physical activity is during leisure. Unfortunately, 24 percent of men and women aged 18 and older report no leisure-time physical activity. The prevalence of leisure-time sedentarism increases with advancing age—33 percent of people aged 45 through 64 and 43 percent of those aged 65 and older engage in no leisure-time physical activity.[9] People with disabilities and lower-income individuals are also more likely to be sedentary at leisure.

It is important for those who are sedentary during their leisure-time to take the first step towards developing a pattern of regular physical activity. Public education efforts need to address the specific barriers that inhibit the adoption of physical activity by different population groups. Older adults, for example, need information about safe walking routes, appropriate foot care and footwear for those with foot problems, appropriate levels of activity for those with coronary heart disease and other chronic conditions, and the availability of group activities in the community.

1.6 **Increase to at least 40 percent the proportion of people aged 6 and older who regularly perform physical activities that enhance and maintain muscular strength, muscular endurance, and flexibility. (Baseline data available in 1991)**

Muscular strength, muscular endurance, and joint flexibility are accepted components of health-related fitness although the type, frequency, duration, and intensity of activities necessary for specific age and gender groups remains to be determined. Regular participation in home maintenance, yardwork, gardening, and selected occupational activities may satisfy this objective in adults. Participation in games and other active childhood pursuits may satisfy this objective in children. Satisfying this objective may require combinations of activities as not all activities will both increase muscular strength and endurance and enhance flexibility.

Muscular strength and endurance describe the ability of skeletal muscles to perform hard and/or prolonged work. Strength and endurance greatly affect the ability to perform the tasks of daily living without undue physical stress and fatigue. Regular use of skeletal muscles helps to improve and maintain strength and endurance.[14,47] Engaging in regular physical activity and engaging in a variety of physical activities can help to satisfy this objective. Although weight training (exercising with free weights or weight machines) can increase muscle strength and endurance, weight training is not necessary to meet this objective and may not be appropriate for all age groups and individuals.[46]

Flexibility describes the range of motion in a joint or sequence of joints. Those with greater flexibility may have a lower risk of future back injury.[7] Older adults with better joint flexibility may be able to drive an automobile more safely.[45] Joint movement through the full range of motion helps to improve and maintain flexibility. Stretching exercises and engaging regularly in a variety of physical activities may help to satisfy this objective.

Physical activities that improve muscular strength, muscular endurance, and flexibility also improve the ability to perform tasks of daily living. The performance of routine daily activities is particularly important to maintaining functional independence and social integration in older adults. Increasing the public's awareness of all of these potential benefits may help to encourage the pursuit of activities that will promote muscular strength, muscular endurance, and flexibility.

1.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

Baseline data source: National Health Interview Survey, CDC.

Overweight occurs when too few calories are expended and too many consumed for individual metabolic requirements.[29] The results of weight loss programs focused on dietary restrictions alone have not been encouraging. Physical activity burns calories, increases the proportion of lean to fat body mass, and raises the metabolic rate.[48] Therefore, a combination of both caloric control and increased physical activity is important for attaining a healthy body weight.[13]

Neither frequent fluctuations in body weight nor extreme restrictions in food intake are desirable. Overweight people should increase their physical activity and should avoid calorie-dense foods, especially those high in fat. Diets that are lower in fat and higher in vegetables, fruits, and grains can facilitate weight reduction. Extremely low-calorie diets, cyclic weight reduction, and fad weight-loss regimes of unscientific merit should be avoided. Practices should be adopted that are safe and that lead to long-term maintenance of appropriate weight. Extreme behaviors as exhibited in bulimia or anorexia nervosa should be medically treated.

Self-help groups and programs that apply the principles of behavior modification (e.g., goal setting, self-monitoring, stimulus control, reinforcement) may help overweight individuals to sustain the physical activity and dietary practices needed to reach an appropriate body weight.

The target for this objective is very ambitious, but given the potential health benefits of weight loss in the overweight person, this objective deserves special priority. Attaining this objective will help to reduce the prevalence of overweight in the total population (see Objective 1.2). The prevention of overweight among those not yet overweight is also vitally important. Objectives 1.3, 1.4, and 1.5 in this priority area and Objectives 2.5 and 2.6 in *Nutrition* address the primary prevention of obesity.

*This objective also appears as Objective 2.7 in *Nutrition*.

Services and Protection Objectives

1.8 Increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education. (Baseline: 36 percent in 1984-86)

Baseline data sources: For students in 5th through 12th grade, the National Children and Youth Fitness Study I, ODPHP; for students in 1st through 4th grade, the National Children and Youth Fitness Study II, ODPHP.

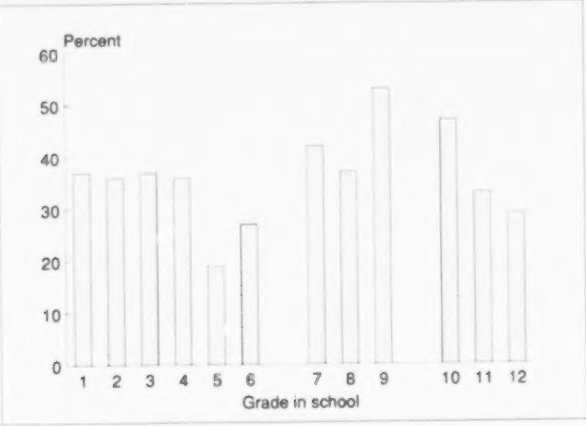


Fig. 1.8

Percentage of students in 1st through 12th grade receiving daily school physical education in 1984-86

Participation in school physical education assures a minimum amount of physical activity for children. Presumably it also encourages extracurricular physical activity by children and continued physical activity into adulthood. Findings from the National Children and Youth Fitness Studies I and II suggest that the quantity, and in particular the quality, of school physical education programs have a significant positive effect on the health-related fitness of children and youth.[40,41] In addition, recent reports suggest that physical education programs in early childhood not only promote health and well-being, but also contribute to academic achievement.[4]

Concern about the amount and quality of youth physical activity and school physical education has been expressed by several groups, including the American Academy of Pediatrics and the American College of Sports Medicine. In 1987, both houses of Congress passed a resolution (H. Con. Res. 97) encouraging State and local educational agencies to provide high quality daily physical education programs for all children in kindergarten through 12th grade. Only one State, Illinois, currently requires daily physical education as part of the curriculum in kindergarten through 12th grade.

Although quantity is not synonymous with quality (see Objective 1.9), the proportion of students receiving daily physical education in school is one measure of the frequency of participation in physical activity and the frequency of exposure to information about how and why to partake in activity. Because time spent engaged in regular, vigorous, and prolonged physical activity outside of school physical education falls off sharply during the fall and winter months, daily school physical education programs can play an important role in helping children and youth maintain a high level of physical activity year-round.

In 1974-75, it was estimated that roughly one-third of students in 5th through 12th grade received physical education daily. As of 1984, the situation had changed little, with only 36 percent of students in 5th through 12th grade receiving physical education daily.[40] In 1986, only 36 percent of students in 1st through 4th grade received daily physical education.[41]

Most children in the lower grades are enrolled in school physical education but many receive it fewer than 5 days per week. In the upper grades, fewer children are enrolled but those who are more often participate in daily physical education classes. Therefore, to achieve this objective, physical education needs to be more frequent for children in the lower grades, whereas enrollment needs to be increased for children in the upper grades.

To achieve this objective equitably for all of America's children, daily adaptive physical education programs should be available for children with special needs. School physical education requirements are also recommended for students in preschool and postsecondary programs.

1.9 **Increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities. (Baseline: Students spent an estimated 27 percent of class time being physically active in 1983)**

Note: Lifetime activities are activities that may be readily carried into adulthood because they generally need only one or two people. Examples include swimming, bicycling, jogging, and racquet sports. Also counted as lifetime activities are vigorous social activities such as dancing. Competitive group sports and activities typically played only by young children such as group games are excluded.

Baseline data source: Siedentop 1983.

Results from the National Children and Youth Fitness Studies I and II revealed that although enrollment in physical education positively affects fitness, the nature of the program is of even greater importance.[40,41] The intent of this objective is to encourage the implementation of high quality physical education programs that will enhance the fitness of children and youth and encourage life-long physical activity.

Although school physical education can help to assure a minimum amount of physical activity for children and youth, studies indicate that only 27 percent of class time is spent in actual physical activity; 26 percent of time is spent in instruction, 22 percent is spent in administrative tasks, and 25 percent is spent waiting.[38] The target of 50 percent is attainable if waiting time is trimmed to less than 5 percent of class time.

Many physical educators stress the importance of dedicating a major portion of the physical education curriculum to lifetime physical activities, especially as the student approaches adulthood. Despite the acknowledged importance of lifetime physical activities, the average student spends more time on lifetime physical activities outside the physical education class (60 percent) than within it.[40] The portion of the physical education curriculum devoted to lifetime fitness in 5th through 12th grade is only 48 percent, 45 percent for boys and 50 percent for girls. The average student is exposed to 5.6 different lifetime activities over a year's time. To a large extent, relays and informal games for younger students and competitive sports for older students are still the mainstay of the physical education program. More class time should be spent engaged in lifetime activities and more emphasis given to developing the knowledge, attitudes, cognitive skills, and physical skills students need to remain physically active throughout life.

1.10 Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs as follows:

Worksite Size	*1985 Baseline*	*2000 Target*
50-99 employees	14%	20%
100-249 employees	23%	35%
250-749 employees	32%	50%
≥750 employees	54%	80%

Baseline data source: National Survey of Worksite Health Promotion Activities, ODPHP.

Worksite physical activity and fitness programs provide a mechanism for reaching large numbers of adults. Examples of such programs include onsite exercise facilities and exercise classes, reimbursable membership fees in health clubs and Ys, informal walking clubs, formal fitness challenges and campaigns, and flexible health benefits that include exercise-related activities. Employer-sponsored programs can be offered on site or in conjunction with community organizations. Smaller worksites may prefer to align themselves with a community recreation facility in order to meet this objective.

Although varied, worksite fitness programs can increase the physical activity and fitness of program participants and improve employee health.[17] Evidence that worksite programs are cost-effective is also growing. Such programs may even reduce employer costs for insurance premiums, disability benefits, and medical expenses.[37] Additional benefits for employers include increased productivity, reduced absenteeism, reduced employee turnover, improved morale, enhanced company image, and enhanced recruitment. Benefits to employers and the community can be further increased by including family members and retirees in worksite programs.

High levels of participation can be achieved by offering a variety of physical activities, maximizing convenience, permitting employees to exercise on company time, or giving employees flexible time for use of the facilities. A promotion and education campaign can aid in recruitment. Incentives and awards for regular participation or achievement can help motivate people to continue. Employee involvement in planning and managing the program may also be important to program success. Special effort should be made to target sedentary and high-risk employees. Optimally, efforts to promote physical activity and fitness at the worksite should be part of a comprehensive health promotion program (see Objective 10.12 in *Occupational Safety and Health* and Objectives 8.6 and 8.7 in *Educational and Community-Based Programs*).

In 1985, a national survey of worksites found that activities to promote physical activity and fitness were present at 22 percent of worksites with 50 or more employees.[26] Of these, the majority offered information (65 percent) or group classes or workshops (59 percent). Far fewer offered equipment or facilities (22 percent), special events or competition (26 percent), or subsidized memberships (27 percent). Of worksites offering exercise equipment or facilities, 89 percent set aside an area specifically for fitness activities, 76 percent had a locker room with showers, 74 percent had stationary bicycles or other aerobic exercise equipment, 62 percent had weight training equipment, 53 percent reported other major exercise facilities or equipment (e.g., swimming pools, running tracks, or racquetball, tennis, or squash courts), and 22 percent had a fitness course.

As purchasers of group health and life insurance plans, employers can also design employee benefit packages that include coverage for fitness club membership fees and community-based fitness classes or reduced insurance premiums and rebates for employees who participate regularly in worksite fitness programs or who can document regular physical activity.

1.11 Increase community availability and accessibility of physical activity and fitness facilities as *follows:*

Facility	*1986 Baseline*	*2000 Target*
Hiking, biking, and fitness trail miles	**1 per 71,000 people**	**1 per 10,000 people**
Public swimming pools	**1 per 53,000 people**	**1 per 25,000 people**
Acres of park and recreation open space	**1.8 per 1,000 people** (553 people per managed acre)	**4 per 1,000 people** (250 people per managed acre)

Baseline data source: McDonald and Cordell 1988.

Participation in regular physical activity depends in part on the availability and proximity of community facilities and conducive environments. As facility distance from residence increases, use generally decreases. People are unlikely to use community resources located more than a few miles away by car or more than a few minutes away by bike or on foot. In a recent national survey, 51 percent of adults agreed that greater availability of exercise facilities would help them become more involved in regular exercise.[15]

The National Recreation and Park Association (NRPA) has established recreation, park, and open space standards and guidelines that recommend, at a minimum, 6.25 to 10.5 acres of developed open space per 1,000 people (or 1 managed acre for every 95 to 160 people).[19] A 1986 survey of municipal and county park and recreation departments found that the average number of citizens per managed acre was 553, well over the standard of 95 to 160.[25] The averages for small, medium, and large communities were 345, 1,147, and 312 citizens per acre, respectively. (Small communities were defined as fewer than 25,000 people, medium as 25,000 to 100,000 people, and large as more than 100,000 people.)

Trails in particular are unavailable in most communities. Only 46 percent of municipal and county park and recreation departments provide fitness trails, 29 percent provide hiking trails, 21 percent provide bicycle trails, and 15 percent provide snow trails. For departments with trails, the average number of miles for all trail types combined is 23, but the median is only 6 miles. Where trails are provided, the average number of citizens per trail mile ranges from 17,107 for hiking trails to 19,129 for biking trails to 28,941 for fitness trails. Including areas without trails yields national estimates of roughly 1 hiking trail mile per 59,000 citizens, 1 biking trail mile per 91,000 citizens, and 1 fitness trail mile per 63,000 citizens. Additional miles of convenient and accessible trails for biking, jogging, hiking, and cross-country skiing are very much needed.

The NRPA standard recommends 1 community swimming pool per 20,000 people within a service radius of 15 to 30 minutes travel time. Only 56 percent of municipal and county park and recreation departments provide one or more community swimming pools. The median number of pools per department is one. For small, medium, and large communities, the medians are 1, 2, and 4 pools, respectively. For departments providing pools, the number of citizens per pool averages 29,850. Including areas served by departments that do not provide pools yields a national estimate of roughly 1 public pool per 53,000 people.

Other facilities conducive to physical activity are also in inadequate supply. For example, the median number of tennis courts per park and recreation department is only 8. For small, medium, and large communities, the medians are 5, 12, and 32 courts, respectively. For departments providing tennis courts, the number of citizens per court averages 6,817. Nationally, the number of citizens per court is estimated to be about

8,000. In contrast, the recommended standard for tennis courts is 1 court per 2,000 people within a service radius of 0.25 to 0.5 miles. Similarly, four is the median number of basketball courts per park and recreation department. For small, medium, and large communities, the medians are 2, 5, and 14, respectively. For departments providing basketball courts, the number of citizens per court averages 12,551. Nationally, the estimate is about 15,500. The recommended standard for basketball courts, however, is 1 court per 5,000 people within a service radius of 0.25 to 0.5 miles. Numerous other facilities including sport playing fields, community recreation centers, and community golf courses also fall short of recommended standards.

1.12 Increase to at least 50 percent the proportion of primary care providers who routinely assess and counsel their patients regarding the frequency, duration, type, and intensity of each patient's physical activity practices. (Baseline: Physicians provided exercise counseling for about 30 percent of sedentary patients in 1988)

Baseline data sources: American College of Physicians (in press); Lewis 1988.

Physicians and other health care providers are viewed as respected sources of information about preventive as well as curative medicine. An estimated 80 percent of the population sees a physician at least once during a given year, and 54 percent of all encounters are with primary care physicians (e.g., general practitioners, family physicians, internists, pediatricians, obstetrician/gynecologists).[43] Other primary care providers with whom patients have frequent contact include physician assistants, nurse practitioners, and nurses.

Most patients seen by primary care providers could benefit from encouragement and advice on physical activity, and 85 percent of adults say that a doctor's recommendation would help them get more involved in regular exercise.[15] However, physical activity assessment and counseling is not yet routine practice for most primary care providers. In 1983, less than half of primary care physicians were found to "routinely" inquire about their patients' exercise habits.[44] A more recent national survey of internists found that although 66 percent routinely obtained and recorded the patterns of exercise for patients new to their practice, exercise counseling was provided to fewer than one-third of all sedentary patients.[1] Furthermore, when exercise was discussed with patients, less than three minutes typically was spent on the subject. A meta-analysis of 7 physician surveys (including 2 national surveys of family practitioners), 1 chart audit study, and 2 consumer surveys also estimated that physicians provide exercise counseling for roughly 30 percent of sedentary patients.[22]

Though few studies have evaluated the effectiveness of physical activity counseling by primary care physicians or other providers, 36 percent of the patients at one intervention site where physicians were trained to counsel had begun a program of regular physical activity compared to 28 percent at a control site.[24] Additional support for the effectiveness of physical activity counseling in clinical settings comes from cardiac rehabilitation programs where exercise compliance rates of 50 percent at 6 months are typically observed.[12] Because of the potential benefit, the U.S. Preventive Services Task Force recommended that clinicians counsel all patients to engage in a program of regular physical activity tailored to their health status and personal lifestyle.[42] Clinicians who are unable to design an effective exercise program should refer patients to a preventive medicine specialist, a certified exercise specialist, or an accredited fitness center.

Surveys suggest that many physicians are uncomfortable about their ability to properly counsel and advise patients about physical activity. A standardized set of questions, prescriptions, and counseling protocols would facilitate attainment of this objective as would training in physical activity assessment and counseling through professional preparation curricula and continuing education programs. Efforts to involve primary care providers personally in physical activity may also be effective in increasing counseling by providers. Several studies have shown that the activity levels of physicians are associated with their physical activity counseling practices.[23] Primary care providers may further extend their influence by serving as visible role models and, as community leaders, can encourage schools to provide daily school physical education (see Objectives 1.8 and 1.9).

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the physical activity and fitness objectives over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the physical activity and fitness objectives.
- Provide sufficient, appropriate curricular content in physical activity and fitness in all schools and programs preparing students for careers in the health, education, and recreation professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on physical activity and fitness by national professional associations whose members have roles in promoting physical activity and fitness.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objective 1.1.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 1.2, 1.3, 1.4, 1.5, 1.6, and 1.7.

New surveillance systems are needed to track Objectives 1.8, 1.9, 1.10, 1.11, and 1.12.

High Priority Needs

- Expanded surveillance of physical activity is needed to provide periodic information on the activity patterns of children and youth, racial and ethnic minorities, and people with disabilities.
- Information is needed about the health-related physical fitness levels of able-bodied and disabled populations aged 6 and older according to age, gender, race, and ethnicity. Periodic assessment of national fitness levels is important because fitness levels reflect changes in physical activity patterns. Although a single national estimate of the health-related physical fitness levels of children aged 6 through 17 was provided by the National Children and Youth Fitness Studies I and II, no national estimates of the health-related fitness of U.S. adults are available.
- Information about the availability and use of community physical activity programs, facilities, and special events is also very much needed.

- State and local surveillance systems are needed to provide State and local estimates for all of the above.

Research Needs

Research is needed, especially for population subgroups, to further define the relationships between physical activity, physical fitness, and:

- the incidence of cardiovascular disease;
- the incidence of colon cancer;
- the incidence of osteoporosis and osteoporosis-related hip fractures;
- the incidence of and disability from osteoarthritis;
- the incidence of low back pain, injury, and disability;
- the incidence of injuries;
- the incidence of obesity and selected types of body fat patterns;
- nutritional patterns;
- the adoption of healthy behavior patterns;
- the prevention and cessation of cigarette smoking;
- the treatment of alcohol and drug abuse;
- the incidence of depressive episodes among depressed people;
- improved mental well-being;
- the cognitive and functional ability of older adults; and
- quality of life.

Research on the determinants of regular physical activity is also needed to identify the knowledge, attitudes, and behavioral and social skills associated with a high probability of adopting and maintaining a regular exercise program.

Related Objectives From Other Priority Areas

Nutrition

2.20	Worksite nutrition/weight management programs

Alcohol and Other Drugs

4.11	Anabolic steroid use

Mental Health and Mental Disorders

6.3	Mental disorders among children and adolescents
6.4	Mental disorders among adults
6.5	Adverse health effects from stress
6.9	Taking steps to control stress
6.11	Worksite stress management programs

Educational and Community-Based Programs

8.4	Quality school health education
8.6	Worksite health promotion activities
8.8	Health promotion programs for older adults
8.10	Community health promotion programs

Unintentional Injuries

9.4	Fall-related deaths
9.7	Hip fractures among older adults
9.19	Protective equipment in sporting and recreation events

Occupational Safety and Health

10.12	Worksite health and safety programs
10.13	Worksite back injury prevention and rehabilitation programs

Heart Disease and Stroke

15.2	Stroke
15.4	Controlled high blood pressure
15.5	Taking action to control blood pressure
15.6	Mean serum cholesterol level
15.7	High blood cholesterol prevalence
15.8	Taking action to reduce blood cholesterol
15.16	Worksite blood pressure/cholesterol education programs

Cancer

16.5 Colorectal cancer

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.3 Preserving function in older adults
17.5 Activity limitation due to chronic back conditions
17.9 Diabetes-related deaths
17.10 Diabetes-related complications
17.11 Diabetes incidence and prevalence

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

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Nutrition

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2. Nutrition

Introduction

Nutrition is essential for sustenance, health, and well-being. But dietary factors also contribute substantially to the burden of preventable illness and premature death in the United States. Dietary factors are associated with 5 of the 10 leading causes of death: coronary heart disease, some types of cancer, stroke, noninsulin-dependent diabetes mellitus, and atherosclerosis. Three other major killers—cirrhosis of the liver, unintentional injuries, and suicides—have been associated with excessive alcohol intake. In general, once-prevalent nutrient deficiencies have been replaced by excesses and imbalances of some food components in the diet. However, undernutrition still occurs in some groups of people, including those who are isolated or economically deprived.

Many dietary components are involved in diet and health relationships. Chief among them is the disproportionate consumption of foods high in fats, often at the expense of foods high in complex carbohydrates and dietary fiber that may be more conducive to health.[27] The *Dietary Guidelines for Americans*[34] recommend that to stay healthy one should eat a variety of foods; maintain healthy weight; choose a diet low in fat, saturated fat, and cholesterol; choose a diet with plenty of vegetables, fruits, and grain products; use sugars only in moderation; use salt and sodium only in moderation; and if alcoholic beverages are consumed, do so in moderation.

American adults currently consume about 36 percent of their total calories from fat, with about 13 percent of calories from saturated fat, though lower levels have been recommended. About 26 percent of the adult population is overweight, which is considerably above the 1990 objective of no more than 10 percent among men and 17 percent among women. In 1985, U.S. daily diets contained about 18 grams of dietary fiber for men aged 19 through 50 and about 12 grams for women of the same age, about half the amount recommended by the National Cancer Institute to reduce the risk for some types of cancer. About 9 percent of the total population consumes more than two alcoholic beverages daily. Low calcium intake among women is of special concern, with median daily intakes considerably below the 1989 Recommended Dietary Allowances (RDA).[23] Reduction of iron deficiency anemia, prominent in the 1990 objectives, continues to be of special concern for children in poverty and among low-income women.

In addition, there are significant nutrition concerns for which national data are currently unavailable. These include the nutritional status of individuals in hospitals, nursing homes, convalescent centers, and institutions such as those for the developmentally disabled; physically, mentally, and developmentally disabled individuals in community settings; children in child care facilities; Native Americans on reservations; populations in correctional facilities; and the homeless. Data are also insufficient to target the old and the very old living independently, the fastest growing segment of the population. It is important to work toward the development and implementation of systems to improve our understanding of the nutritional status of these populations by the year 2000.

Eating disorders such as anorexia nervosa and bulimia are another area of concern for which no national data are currently unavailable. Hunger is also a priority issue for which definition and measurement are not currently available, although considerable research is underway. Finally, nutrition fraud, which has been stimulated in part by increased levels of public interest in diet and health, deserves increased attention during the next decade, even though it remains unmeasurable and unquantified at this time.

The objectives in this priority area derive from the 1990 objectives for nutrition. Four cornerstones are recognized as fundamental for the achievement of these objectives:

(1) marked improvement in accessibility of nutrition information and education for the general public, (2) the maintenance and improvement of a strong national program of basic and applied nutrition research, (3) further development of the scope and magnitude of the National Nutrition Monitoring System, and (4) development of a sustained program to implement and evaluate these objectives.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

2.1* **Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)**

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
2.1a	**Blacks**	**163**	**115**	

Baseline data source: National Vital Statistics System (special analysis), CDC.[30,31]

*For commentary, see Objective 15.1 in *Heart Disease and Stroke*. This objective also appears as Objective 1.1 in *Physical Activity and Fitness* and as Objective 3.1 in *Tobacco*.

2.2* **Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)**

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

*For commentary, see Objective 16.1 in *Cancer*.

2.3* **Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)**

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*	*Percent Decrease*
2.3a	**Low-income women aged 20 and older**	37%	25%	
2.3b	**Black women aged 20 and older**	44%	30%	
2.3c	**Hispanic women aged 20 and older**		25%	
	Mexican-American women	39%[‡]		
	Cuban women	34%[‡]		
	Puerto Rican women	37%[‡]		
2.3d	**American Indians/Alaska Natives**	29-75%[§]	30%	
2.3e	**People with disabilities**	36%[+]	25%	
2.3f	**Women with high blood pressure**	50%	41%	
2.3g	**Men with high blood pressure**	39%	35%	

[†] *Baseline for people aged 20-74*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation.[33] *BMI is calculated by dividing weight in* *kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.*

Baseline data sources: National Health and Nutrition Examination Survey (NHANES), CDC; Hispanic Health and Nutrition Examination Survey, CDC; Indian Health Service; for people with disabilities, National Health Interview Survey, CDC.

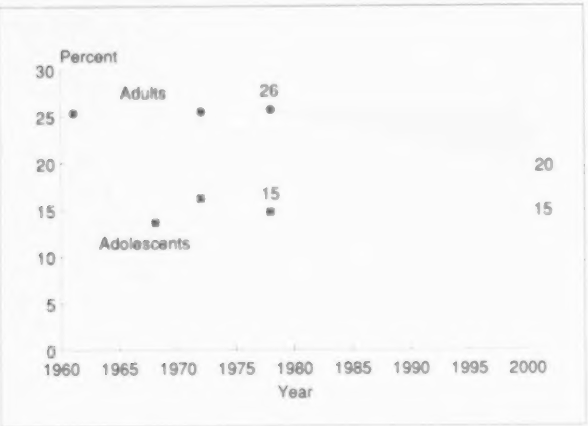


Fig. 2.3

Prevalence of overweight among people aged 20 and older and adolescents aged 12 through 19

Overweight is associated with elevated serum cholesterol levels, elevated blood pressure, and noninsulin-dependent diabetes, and is an independent risk factor for coronary heart disease.[27] Overweight also increases the risk for gallbladder disease and some types of cancer and has been implicated in the development of osteoarthritis of the weight-bearing joints, particularly the knee.

Overweight is multifactorial in origin, reflecting inherited, environmental, cultural, and socioeconomic conditions. The prevalence of overweight increases with advancing age until about age 50 for men and age 70 for women, then declines.[16] Overweight is particularly prevalent in minority populations, especially among minority women. Poverty is related to overweight in women. In 1976-80, 37 percent of women with incomes below the poverty level were overweight compared with 25 percent of those above the poverty level. There is an increased prevalence of overweight among hypertensive and diabetic populations.[27]

Overweight acquired during childhood or adolescence may persist into adulthood and increase the risk for some chronic diseases later in life.[27] Obese children also experience psychological stress. Concern has been expressed that the prevalence of obesity in adolescents may be increasing, but definitive data are lacking. There is also concern that overemphasis on thinness during adolescence may contribute to eating disorders such as anorexia nervosa and bulimia. Therefore, the target for this objective for adolescents is set at no more than 15 percent to prevent an increase in overweight above the 1976-80 baseline. The objective should be achieved through emphasis on physical activity accompanied by properly balanced dietary intake so that growth is not impaired. For adults who are overweight, achieving this objective will require a combination of calorie restriction—particularly calories from dietary fat—accompanied by increased physical activity to achieve weight reduction (see Objective 2.7).

Overweight affects a large proportion of the U.S. population and the prevalence of overweight has not declined among adults for two decades. Given the trend and the fact that weight management is difficult for most people, the target set for adults is very ambitious. Nonetheless, the potential benefits from reduction in the prevalence of overweight are of considerable public health importance and deserve particular emphasis and attention. Achieving this objective and its special population targets will require a concerted public effort to prevent the development of overweight and to encourage and facilitate weight reduction among the overweight (see Objective 2.7). All efforts should be culturally relevant to the population target groups.

An ideal, health-oriented definition of obesity would be based on the degree of excess body fat at which health risks to individuals begin to increase. No such definition exists.[27] Although several measures of body fat are available, each has limitations. Skinfold thickness measurements reflect the amount of body fat, but are difficult to standardize and require equipment that is not readily available in many settings. Body mass index (BMI) is readily calculated from easily obtainable measurements. Until a better measure of body fat is developed, BMI will be used as a statistically derived proxy for obesity.[28,32]

Additional research is needed to define obesity in children. There is a prepubertal increase in subcutaneous fat that is lost during adolescence in boys, while in girls fat deposition continues. Thus, without measures of sexual maturity, measures of body fat and body weight are equally difficult to interpret in preadolescents and adolescents. Additional research also is needed to define the prevalence and health consequences of obesity in adolescents and older adults.

*This objective also appears as Objective 1.2 in *Physical Activity and Fitness*, as Objective 15.10 in *Heart Disease and Stroke*, and as Objective 17.12 in *Diabetes and Chronic Disabling Conditions*.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent. (Baseline: Up to 16 percent among low-income children in 1988, depending on age and race/ethnicity)

Special Population Targets

	Prevalence of Short Stature	*1988 Baseline*	*2000 Target*
2.4a	**Low-income black children <age 1**	15%	10%
2.4b	**Low-income Hispanic children <age 1**	13%	10%
2.4c	**Low-income Hispanic children aged 1**	16%	10%
2.4d	**Low-income Asian/Pacific Islander children aged 1**	14%	10%
2.4e	**Low-income Asian/Pacific Islander children aged 2-4**	16%	10%

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

Baseline data source: Pediatric Nutrition Surveillance System, CDC.

Retardation in linear growth in preschool children serves as an indicator of overall health and development, but may especially reflect the adequacy of a child's diet. Full growth potential may not be reached because of less-than-optimal nutrition, infectious diseases, chronic diseases, or poor health care. Inadequate maternal weight gain during pregnancy and other prenatal factors that influence birth weight also affect the prevalence of growth retardation among infants and young children (see Objectives 14.5 and 14.6 in *Maternal and Infant Health*).

Growth retardation is not a problem for the vast majority of young children in the United States. Given the definition of growth retardation used in this objective, 5 percent of healthy children are expected to be below the fifth percentile of height for age due to normal biologic variation. But a prevalence of more than 5 percent below the fifth percentile for any population subgroup suggests that full growth potential is not being reached by children of that subgroup. This prevalence is exceeded by low-income children in the United States. Among some age and ethnic subgroups of low-income children, up to 16 percent of individuals aged 5 and younger are below the fifth percentile. The prevalence of growth retardation is especially high for Asian and Pacific Islander children aged 12 through 59 months, Hispanic children up to age 24 months, and black infants in the first year of life. The Asian and Pacific Islander children who show the greatest prevalence of low height for age include those of Southeast Asian refugee families. The linear growth status of these children has already shown improvement since the influx of refugee children in the late 1970s, and further improvement is achievable.

Interventions to improve linear growth in populations include better nutrition; improvements in the prevention, diagnosis, and treatment of infectious and chronic diseases; and the provision and use of fully adequate health services. Although the response of a population to interventions for growth retardation may not be as rapid as for iron deficiency or underweight, it should be possible to achieve the objective by the year 2000 in all ethnic, socioeconomic, and age subgroups. Special attention should be given to homeless children, children with disabilities, and other children with special needs.

Risk Reduction Objectives

2.5* **Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)**

Baseline data sources: 1976-80 National Health and Nutrition Examination Survey (NHANES II), CDC; 1985 Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

Considerable evidence associates diets high in fat with increased risk of obesity, some types of cancer, and possibly gallbladder disease. There is strong and consistent evidence for the relationship between saturated fat intake, high blood cholesterol, and increased risk for coronary heart disease.[27] Clinical, animal, and epidemiologic studies demonstrate that high intakes of saturated fatty acids increase the levels of serum total and low-density-lipoprotein (LDL) cholesterol. In turn, high blood cholesterol levels increase the risk of coronary heart disease. Saturated fat intake is the major dietary determinant of serum total cholesterol and LDL cholesterol levels in populations. Lowering saturated fat intake can help to reduce total and LDL cholesterol levels, and thus coronary heart disease (see *Heart Disease and Stroke*). The impact of polyunsaturated fatty acids and monounsaturated fatty acids on serum cholesterol is still being studied; both reduce blood cholesterol levels when substituted for saturated fatty acids. Polyunsaturated fatty acids may independently reduce blood cholesterol levels.

Epidemiologic and experimental animal studies suggest that dietary fat can influence the risk of some cancers, particularly cancers of the breast, colon, and prostate. The amount of fat consumed rather than the specific type of fat appears to be responsible for the risk of some types of cancer. Although the precise quantification of the contribution of dietary fat to the overall risk of cancer is not yet possible, there is general consensus that prudent dietary guidelines for fat intake should be encouraged.

Dietary fat contributes more than twice as many calories as equal amounts by weight of either protein or carbohydrate, and some studies indicate that diets high in fat are associated with higher prevalences of overweight. Weight control may be facilitated by decreasing calorie intake, especially by choosing foods relatively low in fat and calories.[27]

This objective is consistent with good nutritional practices for general health and may lower the risk of heart disease, cancer, and other chronic conditions such as obesity. However, certain population groups need particular attention to assure adequate essential nutrient intake while consuming reduced-fat diets. These groups include children, women, and older adults.

This objective recommends that healthy children follow the recommended eating patterns that are lower in fat and saturated fat as they begin to eat with the family, usually at age 2 or older. Because eating habits developed during childhood can influence lifetime eating practices, it is considered prudent to move toward these recommended eating patterns. However, as food intake varies from day to day, these recommendations are meant to represent an average of nutrient intake over several days.[21] Implementation activities should recognize that this objective applies to the diet for a day or more, not to a single meal or a single food.

Infants and children younger than age 2 have dietary requirements different from those of older people. Infants whose diet is primarily mother's milk or formula often appropriately consume 40 percent or more of calories from fat, and this well-established pattern of infant nutrition should be continued. Diets that contain less than 30 percent of calories from dietary fat may not be appropriate for children younger than age 2 and no restriction of dietary fat is proposed. Care must be taken to ensure the caloric and nutrient needs of the growing child.

The targets of 30 percent of calories or less from fat and less than 10 percent of calories from saturated fat are consistent with established recommendations[21,22] and are believed attainable. To attain this objective, health professionals, food industry organizations, government agencies, and other organizations must collaborate and provide consistent information to the public on how to reduce dietary fat intake and eat a nutritionally adequate diet. In 1988, only 64 percent of people aged 18 and older could identify the major sources of saturated fat, although 72 percent were aware of the association between dietary fat and/or cholesterol and heart disease.[12] Unfortunately, knowledge does not always translate into behavior change. To increase the likelihood of behavior change, nutrition education programs should incorporate the principles and techniques of behavior modification.

*This objective also appears as Objective 15.9 in *Heart Disease and Stroke* and as Objective 16.7 in *Cancer*.

2.6* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of vegetables and fruits and 3 servings of grain products for women aged 19 through 50 in 1985)

Baseline data source: Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

Vegetables (including legumes such as beans and peas), fruits, and grains are good sources of complex carbohydrates and dietary fiber, as well as several vitamins and minerals. These foods are also generally low in fat and can be substitutes for foods high in fat. Dietary patterns with higher intakes of vegetables (including legumes), fruits, and grains are associated with a variety of health benefits, including a decreased risk for some types of cancer.[22,27]

Populations consuming diets rich in vegetables, fruits, and grain products have significantly lower rates of cancer of the colon, breast, lung, oral cavity, larynx, esophagus, stomach, bladder, uterine cervix, and pancreas.[27] The strongest support for a protective effect from fiber-rich foods is for colon cancer, the second leading cause of cancer death in the United States. Numerous effects of dietary fiber on digestive function are known. These include increasing the flow of saliva, improving feelings of satiety, delaying digestion and absorption, binding intestinal bile acids, increasing the mass of intestinal bacteria, decreasing the time stools take to pass through the bowel, and increasing stool weights and frequency of elimination.[15] A fiber-rich diet is advocated in the management of constipation, and may be related to lower rates of hemorrhoids, diverticulosis/diverticulitis, and colon cancer.[27]

There are several unresolved issues related to dietary fiber and cancer prevention. The role of specific types of fiber has not been delineated. Other phytochemicals present in plant foods, such as carotenoids, indoles, and flavonoids, might also be contributing to the observed protective association for certain cancers. Although the specific roles of the numerous potentially protective substances in plant foods are not yet understood, populations with diets rich in these foods experience many health advantages, including lower rates of diet-sensitive cancers.

The National Cancer Institute recommends that the public increase dietary fiber levels to 20 to 30 grams daily with an upper limit of 35 grams.[3] Recommendations from the National Cancer Institute, *The Surgeon General's Report on Nutrition and Health*,[27] *Diet and Health*,[22] and *Dietary Guidelines for Americans*[34] support increased consumption of vegetables, fruits, and whole-grain breads and cereals. An expert committee of the Life Sciences Research Office/Federation of American Societies for Experimental Biology recommended the consumption of a wide variety of grain products, fruits, and vegetables leading to a dietary fiber intake range of 20 to 35 grams per day (10 to 13 grams per 1000 kcal) for the healthy adult population. The panel indicated that this range of intakes may not be appropriate for children, older adults, or people consuming special diets.[15] In the United States, consumption levels average 18 grams for men and 12 grams for women, or only about half the amount of the National Cancer Institute's recommendation to reduce the risk for some types of cancer.

The association shown in epidemiologic and animal studies between diets high in complex carbohydrates and reduced coronary heart disease and diabetes mellitus is difficult to interpret because such diets tend also to be lower in energy and fats, especially saturated fat and cholesterol. Some evidence from clinical studies suggests that water-soluble fibers from foods such as oat bran, beans, and certain fruits are associated with lower blood glucose and blood lipid levels. Further research is needed to clarify whether the effect on blood lipids is an independent effect, and if so, to quantify the relationship.[27]

Current evidence suggests the prudence of increasing consumption of grain products, vegetables (including dried beans and peas), fruits, seeds, and nuts. It is considered prudent for children aged 2 and older and adolescents to progress toward this type of dietary pattern as well.

*This objective also appears as Objective 16.8 in *Cancer*.

2.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

Baseline data source: National Health Interview Survey, CDC.

Overweight occurs when too few calories are expended and too many consumed for individual metabolic requirements.[26] The results of weight loss programs focused on dietary restrictions alone have not been encouraging. Physical activity burns calories, increases the proportion of lean to fat body mass, and raises the metabolic rate.[38] Therefore, a combination of both caloric control and increased physical activity is important for attaining a healthy body weight.[8] (See Objectives 1.3, 1.4, and 1.5 in *Physical Activity and Fitness*.)

Neither frequent fluctuations in body weight nor extreme restrictions in food intake are desirable. Overweight people should increase their physical activity and should avoid calorie-dense foods, especially those high in fat. Diets that are lower in fat and higher in vegetables, fruits, and grains can facilitate weight reduction. Extremely low-calorie diets, cyclic weight reduction, and fad weight-loss regimes of unscientific merit should be avoided. Practices should be adopted that are safe and that lead to long-term maintenance of appropriate weight. Extreme behaviors as exhibited in bulimia or anorexia nervosa should be medically treated.

Self-help groups and programs that apply the principles of behavior modification (e.g., goal setting, self-monitoring, stimulus control, reinforcement) may help overweight individuals to sustain the physical activity and dietary practices needed to reach an appropriate body weight.

The target for this objective is very ambitious, but given the potential health benefits of weight loss in the overweight person, this objective deserves special priority. Attaining this objective will help to reduce the prevalence of overweight in the total population (see Objective 2.3). The prevention of overweight is also vitally important. Objectives 2.5 and 2.6 in this priority area and Objectives 1.3, 1.4, and 1.5 in *Physical Activity and Fitness* address the primary prevention of obesity.

*This objective also appears as Objective 1.7 in *Physical Activity and Fitness.*

2.8 Increase calcium intake so at least 50 percent of youth aged 12 through 24 and 50 percent of pregnant and lactating women consume 3 or more servings daily of foods rich in calcium, and at least 50 percent of people aged 25 and older consume 2 or more servings daily. (Baseline: 7 percent of women and 14 percent of men aged 19 though 24 and 24 percent of pregnant and lactating women consumed 3 or more servings, and 15 percent of women and 23 percent of men aged 25 through 50 consumed 2 or more servings in 1985-86)

Note: The number of servings of foods rich in calcium is based on milk and milk products. A serving is considered to be 1 cup of skim milk or its equivalent in calcium (302 mg). The number of servings in this objective will generally provide approximately three-fourths of the 1989 Recommended Dietary Allowance (RDA) of calcium. The RDA is 1200 mg for people aged 12 through 24, 800 mg for people aged 25 and older, and 1200 mg for pregnant and lactating women.[23]

Baseline data source: Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

Calcium is essential for the formation and maintenance of bones and teeth.[27] The level of bone mass achieved at skeletal maturity (peak bone mass) is a factor modifying the risk for developing osteoporosis. Peak bone mass appears to be related to intake of calcium during the years of bone mineralization.[22] Opinion is divided as to the age at which peak bone mass is achieved. Most of the accumulation of bone mineral occurs in humans by about 20 years of age. However, after the linear growth phase, there is a period of consolidation of bone density that continues until approximately age 30 to 35. A high peak bone mass is thought to be protective against fractures in later life.

Osteoporosis is a multifactorial, complex disorder, but low calcium intake appears to be one important factor in its development. The ideal level of calcium intake for development of peak bone mass is unknown and it has not yet been established to what extent increased calcium intake will prevent osteoporosis. However, females, particularly adolescent and young adult females, should increase food sources of calcium.[27] In postmenopausal women, the group at highest risk for osteoporosis, estrogen replacement therapy under medical supervision is the most effective means to reduce the rate of bone loss and the risk for fractures.[27] (See Objective 17.18 in *Diabetes and Chronic Disabling Conditions.*)

Children, pregnant and lactating women, and older adults have special needs for calcium based on, respectively, the extra demands of growth, milk production, and the age-related decrease in absorption of calcium. Research is ongoing to determine the dietary calcium requirements for older adults. People with incomes below the poverty level are also of special concern. These individuals, especially women, have consistently lower mean daily calcium intakes than the rest of the population.

Dairy products, including fluid milks, yogurt, and hard and soft cheeses, provide about 55 percent of calcium in U.S. diets.[23] Other major food sources of dietary calcium include canned fish, certain vegetables (e.g., kale, broccoli), legumes (beans and peas), calcium-precipitated tofu, calcium-enriched grain products, lime-processed tortillas, seeds, and nuts. It is uncertain if there are biologically important differences in the absorption of calcium from different foods or diets. With current food selection practices in the United States, use of dairy products constitutes the difference between inadequate and adequate intakes of calcium.

For people who can readily digest milk and milk products, the lower fat forms of these products are among the preferred sources of calcium for attaining the recommended levels of calcium intake. A steady increase in the variety of lower fat dairy products in the marketplace is anticipated. Per capita availability data and comparison of results from the 1977-78 Nationwide Food Consumption Survey and the 1985-86 Continuing Survey of Food Intakes by Individuals indicate that a trend towards increased use of lower fat milk is already occurring.

Most people with lactose intolerance are able to consume small amounts of lactose without distress, and there are a variety of low-lactose and reduced-lactose dairy products available. For example, the Special Supplemental Food Program for Women, Infants, and Children (WIC) already includes low- and lactose-free dairy products in its packages for pregnant women when needed. People who do not (or cannot) consume and absorb adequate levels of calcium from dairy food sources may consider use of calcium-enriched foods, and those with dietary, biochemical, or clinical evidence of inadequate intake should receive professional advice on the proper type and dosage of calcium supplements. Such supplements may be appropriate for some older adults, but doses exceeding the RDA are not advised.[23]

In 1988, only 43 percent of people aged 18 and older were aware of the association between calcium and osteoporosis.[9] The public should be educated about the importance of calcium to health, recommended intakes (in terms of servings), and good food sources of calcium, particularly lower fat dairy products. Educational efforts for racial and ethnic minority groups should emphasize culturally appropriate food sources of calcium.

2.9 **Decrease salt and sodium intake so at least 65 percent of home meal preparers prepare foods without adding salt, at least 80 percent of people avoid using salt at the table, and at least 40 percent of adults regularly purchase foods modified or lower in sodium. (Baseline: 54 percent of women aged 19 through 50 who served as the main meal preparer did not use salt in food preparation, and 68 percent of women aged 19 through 50 did not use salt at the table in 1985; 20 percent of all people aged 18 and older regularly purchased foods with reduced salt and sodium content in 1988)**

Baseline data sources: For salt use at the table and in food preparation, the Continuing Survey of Food Intakes by Individuals (CSFII), USDA; for purchasing foods with reduced salt and sodium content, the Health and Diet Survey, FDA.

There is general agreement favoring sodium restriction for people with hypertension.[20,27] Debate continues on whether people without high blood pressure should restrict dietary sodium intake.

Most investigators agree on the concept of sodium sensitivity: while some people maintain blood pressure levels over a wide range of sodium intake, "salt sensitive" individuals display increased blood pressure in response to high-sodium intake. Blacks have a high prevalence of sodium-sensitive hypertension.

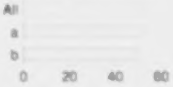
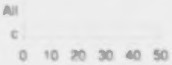
Most epidemiologic studies of the relationship between sodium intake and blood pressure have focused on differences between populations in different cultures. Until recently, most studies within acculturated populations have not demonstrated a strong association. However, in 1988, the Intersalt Cooperative Research Group, involving 52 centers around the world, reported that in several of the centers, the higher the intake of sodium, the higher the blood pressure.[11] In general, the Intersalt Study indicated that the rate of increase of blood pressure with age was significantly related to sodium intake as measured by sodium excretion.

The suggestion from the Intersalt Study that a lower sodium intake may prevent blood pressure from increasing with age may be particularly appropriate for groups at increased risk for developing hypertension, such as those with a family history of high blood pressure, blacks, and those with high normal blood pressure.

Although not all individuals are equally susceptible to the effects of sodium, several observations suggest that it would be wise for most people to use salt and sodium only in moderation. These include the lack of a practical biological marker for identifying sodium-sensitive individuals, the benefit of sodium restriction for those who are salt sensitive, and the absence of known harm from moderate sodium restriction.

2.10 Reduce iron deficiency to less than 3 percent among children aged 1 through 4 and among women of childbearing age. (Baseline: 9 percent for children aged 1 through 2, 4 percent for children aged 3 through 4, and 5 percent for women aged 20 through 44 in 1976-80)

Special Population Targets

	Iron Deficiency Prevalence	*1976-80 Baseline*	*2000 Target*	*Percent Decrease*
2.10a	**Low-income children aged 1-2**	**21%**	**10%**	
2.10b	**Low-income children aged 3-4**	**10%**	**5%**	
	At Age 5-6 Months—			
2.10c	**Low-income women of childbearing age**	**8%**[†]	**4%**	
	Anemia Prevalence	*1983-85 Baseline*	*2000 Target*	
2.10d	**Alaska Native children aged 1-5**	**22-28%**	**10%**	
2.10e	**Black, low-income pregnant women (third trimester)**	**41%**[‡]	**20%**	

[†] *Baseline for women aged 20-44*

[‡] *1988 baseline for women aged 15-44*

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation.[14] Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria.[5] The above prevalences of iron deficiency and *anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.*

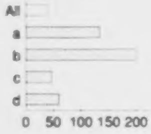
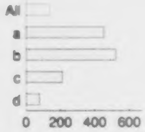
Baseline data sources: National Health and Nutrition Examination Survey (NHANES), CDC; for Alaska Native children, CDC 1988; for low-income pregnant women, Pregnancy Nutrition Surveillance System, CDC.

Chronic iron deficiency in childhood may have adverse effects on growth and development. The prevalence of iron deficiency is higher in black children compared to white children, and is substantially higher in children from families with incomes below the poverty level. A reduction in the prevalence of iron deficiency among young children can be achieved by increasing the proportion of new mothers who breastfeed (see Objective 2.11), increasing the use of iron-fortified formulas when formulas are used, and delaying the introduction of whole cow milk feedings until 9 to 12 months of age. Trends in the prevalence of anemia, primarily related to iron deficiency, indicate that progress is being made in this area.[39] However, continued efforts are needed to assure that these trends continue, especially among low-income children.

Women of childbearing age are at increased risk for iron deficiency because of iron loss in menstruation and because of the iron requirements of pregnancy. Maternal iron deficiency during pregnancy and lactation increases the likelihood that the infant will be iron deficient in the early years of life. A reduction in iron deficiency among women of childbearing age can be achieved by nutrition education to encourage selection of iron-rich foods and by adequate supplementation with iron during pregnancy.

2.11* **Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)**

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*	*Percent Increase*
	During Early Postpartum Period—			
2.11a	**Low-income mothers**	32%	75%	
2.11b	**Black mothers**	25%	75%	
2.11c	**Hispanic mothers**	51%	75%	
2.11d	**American Indian/Alaska Native mothers**	47%	75%	
	At Age 5-6 Months—			
2.11a	**Low-income mothers**	9%	50%	
2.11b	**Black mothers**	8%	50%	
2.11c	**Hispanic mothers**	16%	50%	
2.11d	**American Indian/Alaska Native mothers**	28%	50%	

Baseline data sources: Ross Laboratories Mothers Survey; for American Indians/Alaska Natives, Pediatric Nutrition Surveillance System, CDC.

*For commentary, see Objective 14.9 in *Maternal and Infant Health.*

2.12* **Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)**

Special Population Targets

	Appropriate Feeding Practices	*Baseline*	*2000 Target*
2.12a	**Parents and caregivers with less than high school education**	—	65%
2.12b	**American Indian/Alaska Native parents and caregivers**	—	65%

*For commentary, see Objective 13.11 in *Oral Health.*

2.13 **Increase to at least 85 percent the proportion of people aged 18 and older who use food labels to make nutritious food selections. (Baseline: 74 percent used labels to make food selections in 1988)**

Baseline data source: Health and Diet Survey, FDA.

Food labeling provides information to people about food content and can facilitate dietary choices most conducive to health. Currently, adults report using label information to select foods that have been reduced in sodium, fat, and cholesterol. Sales figures show a shift toward products with such characteristics. As consumers become more aware of the importance to their health of dietary factors such as saturated fat, it is reasonable to anticipate that they will increasingly use label information in selecting food items for purchase.

Services and Protection Objectives

2.14 **Achieve useful and informative nutrition labeling for virtually all processed foods and at least 40 percent of fresh meats, poultry, fish, fruits, vegetables, baked goods, and ready-to-eat carry-away foods. (Baseline: 60 percent of sales of processed foods regulated by FDA had nutrition labeling in 1988; baseline data on fresh and carry-away foods unavailable)**

Baseline data source: Food Label and Package Survey, FDA.

A wide variety of nutrition-labeled processed product selections are available to the shopper, although it may take extensive effort to make comparisons and find substitutions in some product areas. The food selection process can be made more convenient through universal participation of manufacturers in nutrition labeling within the major processed food categories.

Nutrition labeling is less advanced and more variable in content and format for fresh meats/poultry/fish, produce, onpremise baked goods, and delicatessen and ready-to-eat carry-away foods than for packaged processed foods. In addition, baseline labeling data are scarce for these peripheral store sections. Wider implementation of electronic scanning systems for variable weight products should provide some data by the year 2000.

To facilitate the choosing of foods consistent with the *Dietary Guidelines for Americans,*[34] food labels should be easy for consumers to read and understand, and should present the information that is most important for consumers to know. Food labels should minimally disclose useful and accurate information about serving size, calories, fat, saturated fat, cholesterol, fiber, sodium, calcium, and iron. Use of large type and graphics may help to make food labels easier to read and understand. Efforts to improve the quality as well as the quantity of nutrition labeling will help consumers succeed in following dietary recommendations. These efforts should extend to the commodity food programs that serve schools and other institutions, low-income families, and American Indians living on reservations.

2.15 Increase to at least 5,000 brand items the availability of processed food products that are reduced in fat and saturated fat. (Baseline: 2,500 items reduced in fat in 1986)

Note: A brand item is defined as a particular flavor and/or size of a specific brand and is typically the consumer unit of purchase.

Baseline data source: Nielsen Company National Scantrack.

If Americans are to meet the objective for reduction of dietary fat and saturated fat in their diets by the year 2000 (see Objective 2.5), sufficient food choices must be available. Considerable progress has already been achieved in increasing the availability of processed food products with lowered sodium. It is equally important that a wide selection of lower fat and saturated fat foods be offered to the public. Processed food products that are reduced in fat and saturated fat should also be made more available to schools and other institutions, low-income families, and American Indians living on reservations served by commodity food programs.

2.16 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer identifiable low-fat, low-calorie food choices, consistent with the *Dietary Guidelines for Americans*. (Baseline: About 70 percent of fast food and family restaurant chains with 350 or more units had at least one low-fat, low-calorie item on their menu in 1989)

Baseline data source: Survey of Chain Operators, National Restaurant Association.

Restaurants, including fast food restaurants, and institutional food service operations at worksites, hospitals, nursing homes, postsecondary institutions, correctional facilities, and military installations play a critical role in the dietary intake of the U.S. population. In 1985, 40 percent of all meals were consumed outside the home. On a typical day, 45.8 million people, a fifth of the U.S. population, are served at fast food establishments. Because so many individuals eat food outside the home, it is important to encourage food service personnel to offer healthful food choices. If people are to choose a diet that promotes health and reduces the risk of some diseases, then food choices based on the *Dietary Guidelines for Americans*[34] should be offered in these settings. Therefore, the concepts of these guidelines and the principles for healthful menu planning and food preparation need to be promoted and reinforced to restaurant owners and managers and to culinary training and food service management and personnel.

Baseline data for this objective are limited. However, a national survey of worksites found that approximately 10 percent of worksites with 50 or more employees offered nutrition education activities for employees that included healthy food service selections.[25] Limited data are also available from a survey of 35 fast food and family restaurants with 350 or more units.[24] A substantial proportion of the respondents offered an entree salad or salad bar (71 percent), reduced or low calorie dressings (71 percent), fruit juice (71 percent), and low fat milk (76 percent). Fifty-two percent served a grilled chicken sandwich, 29 percent featured fresh fruit, 29 percent offered low fat frozen yogurt, and 24 percent offered skim milk. In addition, 62 percent used either vegetable oil and/or vegetable shortening exclusively for frying operations.

2.17 Increase to at least 90 percent the proportion of school lunch and breakfast services and child care food services with menus that are consistent with the nutrition principles in the *Dietary Guidelines for Americans*. (Baseline data available in 1993)

The *Dietary Guidelines for Americans*[34] is the primary expression of Federal nutrition policy. As such, it represents the best principles of healthy dietary practices and offers appropriate guidance for meal planning in schools and other food service programs for children. For many children, school meals make a significant contribution to their total day's nutrient intake. Child care settings for preschoolers and before and after school programs for older children also contribute substantially to the nutrient intake of America's children. Thus, these meals must be well balanced and in keeping with all of the principles of sound nutrition.

School food service personnel, and particularly cafeteria managers, are to a large extent the gatekeepers to schoolchildren's food supply. Although meal planning in many schools already incorporates the principles of the *Dietary Guidelines*, such planning should be universal. It is especially important that school meals provide choices that include low fat foods, vegetables, fruits, and whole-grain products. New foods may need to be introduced gradually to increase their acceptance by students.

School fundraising activities that involve food sales, onsite vending machine offerings, and food offerings at concession stands during recreational and other events should also reflect the principles of the *Dietary Guidelines*. In addition, schools should provide students with preschool through 12th grade nutrition education (see Objective 2.19) and point-of-choice nutrition information in the school cafeteria.

2.18 Increase to at least 80 percent the receipt of home food services by people aged 65 and older who have difficulty in preparing their own meals or are otherwise in need of home-delivered meals. (Baseline data available in 1991)

In 1984, about 5 percent of men and 9 percent of women aged 65 and older reported difficulty in preparing meals.[17] The proportion increased to 19 percent of men and 30 percent of women among those aged 85 and older. While data are not currently available to identify what proportion of this population receives assistance with meals, a segment of this older population is at high risk for dietary deficiencies. For those who have difficulty in preparing meals and are also homebound, the risk increases.

There is additional evidence that older adults who live alone, who may or may not have difficulty in preparing meals, are also at increased risk of dietary deficiencies. The National Health and Nutrition Examination Surveys I and II found that older individuals who lived alone were more likely to eat alone, eat away from home, or skip meals than did their peers of the same age who lived with one or more people.[6,7,29]

In many communities, food service programs are available that either deliver meals to older adults in their homes or offer meals in congregate settings. For the homebound, federally funded programs are available to adults aged 60 and older. In fiscal year 1988, 745,097 homebound people were served 94.7 million meals through Title III of the Older Americans Act.[36] In addition, "Meals on Wheels" and other programs are offered in many communities through private sources that may charge a fee for the service of home-delivered meals.

The demand for such services can be expected to increase as the U.S. population ages over the next decade. To reduce the risk of nutritional deficiencies, and to help older adults maintain independence, home-delivered services will need to keep pace with demand, especially among the frailest elders. Since the risk for chronic disease increases with age, meals prepared for special diets (e.g., diabetic) also will be needed.

2.19 Increase to at least 75 percent the proportion of the Nation's schools that provide nutrition education from preschool through 12th grade, preferably as part of quality school health education. (Baseline data available in 1991)

Most food preferences and many dietary habits are established during childhood. Educating school age children about nutrition is important to establishing healthy eating habits early in life. Providing nutrition education from preschool through 12th grade will reach children during the years when they are beginning to make their own decisions and to eat more food away from home.

Currently, many students understand that there is a connection between good nutrition and good health, but a large number do not understand that a diet high in fat, sugars, or salt may increase the risk for certain chronic diseases.[10] Furthermore, although the majority know that a nutritious diet leads to good health, this knowledge is not reflected in their food-buying and meal patterns. One survey found that only 21 percent of students say they think a lot about whether the food they choose is good for them.[10] When they shop for snacks or food for themselves, 65 percent say they buy candy. Another survey of a nationally representative sample of eighth and tenth graders found that 48 percent of the girls and 32 percent of the boys had not eaten breakfast on 5 or more days during the preceding week.[2] On average, students reported eating three snacks per day. More than half of these snacks were foods high in fat and/or sugars. Nearly 4 out of every 10 students ate fried foods four or more times a week.

Although few studies have examined the impact of school nutrition education on behavior, nutrition education can increase students' knowledge about nutrition and can help shape appropriate attitudes. A well-designed curriculum can help students develop the behavioral skills they need to plan, prepare, and select healthful meals and snacks. Optimally, school nutrition education should include educational cafeteria experiences as well as classroom work. The required nutrition education can be provided in a variety of classroom units. While it is advantageous to include nutrition education as a component of quality health education, integration into science and related curricula can serve to reinforce principles and messages learned in health units. To further enhance the likelihood that students adopt healthy dietary practices, students must have access to healthful food choices (see Objective 2.17) and the support of those around them.

To attain this objective, all States and school districts should require nutrition education. Only 12 States required nutrition education in 1985. Achieving this objective also requires that teachers be knowledgeable about nutrition and how to teach nutrition. Thus, nutrition coursework should be included in the core curriculum for the professional preparation of teachers of all grades and emphasized in continuing education activities for teachers.

For a definition of quality school health education, see *Educational and Community-Based Programs*.

2.20 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer nutrition education and/or weight management programs for employees. (Baseline: 17 percent offered nutrition education activities and 15 percent offered weight control activities in 1985)

Baseline data source: National Survey of Worksite Health Promotion Activities, ODPHP.

Worksite programs provide a mechanism for reaching large numbers of employees with information, activities, and services that encourage and facilitate the adoption of dietary practices conducive to health. Employer-sponsored programs can be offered on site or in conjunction with community organizations. Examples of such programs include weight management classes, weight loss competitions, brown-bag seminars, self-help programs, cooking demonstrations and classes, healthy food service and vending machine selections, point-of-choice nutrition information programs, and flexible health benefits that include nutrition-related activities. Smaller worksites may prefer to align themselves with a community organization in order to meet this objective. Worksite nutrition education and weight loss programs should be made available to the family members of employees and company retirees as well as current employees. Optimally, nutrition education and weight management programs at the worksite should be part of a comprehensive health promotion program. (See Objective 10.12 in *Occupational Safety and Health* and Objectives 8.6 and 8.7 in *Educational and Community-Based Programs*. See also Objective 15.16 in *Heart Disease and Stroke* and Objective 1.10 in *Physical Activity and Fitness*.)

In 1985, a national survey of worksites with 50 or more employees found that 17 percent offered nutrition education activities to their employees and 15 percent offered activities to help employees control their weight.[25] Whereas only 8 percent of worksites with 50 to 99 employees offered such programs, almost half (48 percent) of worksites with 750 or more employees offered these types of activities. Worksites with nutrition education activities offered the following activities: information (89 percent), healthy food service selections (57 percent), group classes or workshops (42 percent), healthy vending machine selections (39 percent), individual counseling (33 percent), and special events (23 percent). Worksites with weight control activities offered information (77 percent), self-help materials (62 percent), group classes or workshops (52 percent), individual counseling (43 percent), and special events or competitions (23 percent).

2.21 Increase to at least 75 percent the proportion of primary care providers who provide nutrition assessment and counseling and/or referral to qualified nutritionists or dietitians. (Baseline: Physicians provided diet counseling for an estimated 40 to 50 percent of patients in 1988)

Baseline data source: Lewis 1988.

Primary care providers are optimally positioned in the health care system to provide preventive services, including nutrition assessment and counseling. Primary care providers include general practitioners, family physicians, internists, pediatricians, geriatricians, obstetrician/gynecologists, physician assistants, nurse practitioners, and nurses. The public views physicians in particular as credible sources of health information. In 1987, Americans visited physicians an average of 5.3 times per year, and 76 percent visited a physician within the preceding year.[19] Nutrition advice from other health professionals (e.g., pharmacists, dentists) reaches even more people and reinforces important nutrition messages. Nutrition counseling by qualified nutritionists and dietitians, who are trained to help people make dietary changes, is important for many patients.

Dietary modifications can be achieved through primary care interventions. Dietary assessment, advice, counseling, and followup by physicians and/or dietitians/nutritionists have been found to be effective in reducing patient dietary fat intake and serum cholesterol.[4] Yet only 26 percent of adults report that "eating proper foods" was often or sometimes discussed during visits to a doctor or other health professional for routine care.[18] A recent national survey of internists found that 66 percent routinely obtained and recorded information about diet for patients new to their practice.[1] A meta-analysis of 9 physician surveys, 2 chart audit studies, and 1 consumer survey estimated that physicians provide diet counseling for only 40 to 50 percent of patients.[13] Physicians also fail to refer many of their patients to qualified nutritionists or dietitians for counseling.

The U.S. Preventive Services Task Force recommended that physicians and other clinical service providers include nutrition counseling and referral as a standard part of their practice.[35] The Task Force recommended:

> "Clinicians should provide periodic counseling regarding dietary intake of calories, fat (especially saturated fat), cholesterol, complex carbohydrates and fiber, and sodium. Specifically, patients should receive a diet and exercise prescription designed to achieve and maintain a desirable weight by keeping caloric intake balanced with energy expenditures. Adolescents and adults, in particular, should be given dietary guidance on how to reduce total fat intake to less than 30 percent of total calories and dietary cholesterol to less than 300 mg/day. Saturated fat consumption should be reduced to less than 10 percent of total calories. To achieve these goals, patients should emphasize consumption of fish, poultry prepared without skin, lean meats, and low-fat dairy products. . . . Patients should be encouraged to eat a variety of foods that emphasize consumption of whole grain products and cereals, vegetables and fruits. Those who are at risk for dental caries, especially children, should limit their consumption of foods high in refined sugars. It is also reasonable to recommend eating foods low in sodium and limiting the amount of salt added in food preparation and at the table. Adolescent girls and women should receive counseling on methods to ensure adequate calcium and iron intake; parents should be encouraged to include iron-enriched foods in the diets of infants and young children; and pregnant women should receive specific nutritional guidelines to enhance fetal and maternal health. . . . Clinicians who lack the time or skills to perform a complete dietary history, to address potential barriers to changes in eating habits, and to offer specific guidance on food selection and preparation, should either have patients seen by other trained providers in the office or clinic or should refer patients to a registered dietitian or qualified nutritionist for further counseling."

Although many physicians consider diet modification important for their patients, they often feel ill-prepared to counsel patients about dietary behaviors. When asked about their confidence in dealing with dietary change, 35 percent of Massachusetts primary care physicians reported being "very prepared" to counsel patients and only 7 percent reported feeling "very successful" in this regard.[37] Thus for many physicians, referring patients for nutrition assessment and counseling represents appropriate clinical practice. To ensure high rates of referral, office systems should be established to prompt and facilitate referral.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the nutrition objectives over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the nutrition objectives.
- Provide sufficient, appropriate curricular content in nutrition in all schools and programs preparing students for careers in the health professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects. Medical schools, in particular, should require a separate course in human nutrition for all students.
- Provide sufficient, appropriate curricular content in nutrition in all schools and programs preparing students for careers in education and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on nutrition by national professional associations whose members have roles in promoting healthful nutrition.

Surveillance and Data Needs

Availability of Future Data

Annual or biennial data from existing surveys, surveillance systems, and vital records are available to track Objectives 2.1, 2.2, 2.4, 2.14, and 2.15.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 2.3, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12, and 2.13.

New surveillance systems are needed to track Objectives 2.16, 2.17, 2.18, 2.19, 2.20, and 2.21.

High Priority Needs

Surveillance and data systems supporting improvement of nutrition in the United States depend upon the continued functioning and the enhancement of the capability of the National Nutrition Monitoring System (NNMS). This system is called upon to provide timely detection and measurement of nutritional problems, dietary practices, and nutrition-related knowledge and behaviors in the U.S. population and in specific high-risk groups. As part of this system, the nutrient intakes and nutritional status of the U.S. population are periodically documented by the National Health and Nutrition Examination Surveys (NHANES) conducted by the National Center for Health Statistics (NCHS) of the Centers for Disease Control (CDC) and the Nationwide Food Consumption Surveys (NFCS), including the Continuing Surveys of Food Intakes by Individuals (CSFII) conducted by the Human Nutrition Information Service (HNIS) of the Department of Agriculture (USDA). Further information about nutrition and health status of specific population groups, consumer knowledge and behavior, and food and diet composition is provided by several other data sources, including the Pregnancy and the Pediatric Nutrition Surveillance Systems by CDC, the National Health Interview Surveys (NHIS) by NCHS, the Diet and Health Knowledge Survey by HNIS/USDA, and the Total Diet Study and Health and Diet Surveys by the Food and Drug Administration (FDA). The National Institutes of Health and the Agricultural Research Service of USDA provide the primary research base for these nutrition monitoring activities.

The NNMS forward plan should be designed so that it can provide data to define mid-course progress toward the objectives contained in this priority area. Furthermore, data are needed on the nutritional status of the following:

- People in hospitals, nursing homes, convalescent centers, and institutions such as those for the developmentally disabled.
- Physically, mentally, and developmentally disabled individuals in community settings.
- Children in child care facilities.
- Native Americans on reservations.
- The old and the very old living independently.
- People in correctional facilities.
- The homeless.

In addition to improvements in the NNMS component surveys, survey methodologies should be developed that increase and refine the present base of epidemiologic information on the relationships between dietary patterns and chronic diseases.

Finally, data should be more readily available at the State and local level.

Research Needs

Nutrition research is needed to determine the following:

- The role of specific dietary factors in the etiology and prevention of chronic diseases, including cancer, osteoporosis, and stroke.
- The childhood dietary patterns that will best provide adequate intake of calories and nutrients essential for growth and development, and also prevent later development of chronic diseases.
- The effects of maternal nutrition on the health of the developing fetus.
- The nutrient and energy requirements of older adults.
- The effects of nutrition on age-related impairment of organ system functions (e.g., cardiovascular, gastrointestinal/oral cavity, immune, musculoskeletal, and nervous systems).
- Comprehensive dietary recommendations relevant to common morbidity patterns among older adults.
- Healthful dietary patterns translated from nutrient requirements.
- Biochemical markers of dietary intake to improve ability to monitor the effects of dietary intervention.
- Effective educational methods to translate dietary recommendations into appropriate food choices and sustained behavioral changes for various subpopulations.
- Food labels that are more informative and useful to the public.
- The relationship of total body fat and body fat distribution to health outcomes (i.e., a health-related definition of obesity).

- The epidemiology of weight gain and successful weight loss, the health effects of weight loss and regain (weight cycling), and the healthy nutritional practices that best promote weight loss.
- The etiology, epidemiology, prevention, and treatment of eating disorders such as anorexia nervosa and bulimia.
- Medication and nutrition interactions.
- The definition and measurement of hunger.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.3 Moderate physical activity
1.4 Vigorous physical activity
1.5 Sedentary lifestyle
1.10 Worksite fitness programs
1.12 Clinician counseling about physical activity

Alcohol and Other Drugs

4.8 Alcohol consumption

Educational and Community-Based Programs

8.4 Quality school health education
8.6 Worksite health promotion activities
8.8 Health promotion programs for older adults
8.10 Community health promotion programs

Occupational Safety and Health

10.12 Worksite health and safety programs

Food and Drug Safety

12.1 Foodborne infections
12.2 Salmonella outbreaks
12.3 Refrigeration and cutting board practices

Oral Health

13.1 Dental caries
13.9 Water fluoridation
13.10 Topical and systemic fluorides

Maternal and Infant Health

14.1 Infant mortality
14.5 Low birth weight
14.6 Weight gain during pregnancy
14.11 Prenatal care
14.12 Age-appropriate preconception counseling by clinicians

Heart Disease and Stroke

15.2 Stroke
15.3 End-stage renal disease
15.4 Controlled high blood pressure
15.5 Taking action to control blood pressure
15.6 Mean serum cholesterol level
15.7 High blood cholesterol prevalence
15.8 Taking action to reduce blood cholesterol
15.15 Appropriate diet and/or drug therapy for high blood cholesterol
15.16 Worksite blood pressure/cholesterol education programs

Cancer

16.3 Breast cancer
16.5 Colorectal cancer
16.10 Tobacco, diet, and cancer screening counseling by clinicians

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.5 Activity limitation due to chronic back conditions
17.9 Diabetes-related deaths
17.10 Diabetes-related complications
17.11 Diabetes incidence and prevalence
17.18 Counseling about estrogen replacement therapy

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

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Tobacco

3

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3. Tobacco

Introduction

Tobacco use is responsible for more than one of every six deaths in the United States and is the most important single preventable cause of death and disease in our society.[59] Tobacco use is a major risk factor for diseases of the heart and blood vessels; chronic bronchitis and emphysema; cancers of the lung, larynx, pharynx, oral cavity, esophagus, pancreas, and bladder; and other problems such as respiratory infections and stomach ulcers.[59] Cigarette smoking accounts for about 390,000 deaths yearly including 21 percent of all coronary heart disease deaths, 87 percent of lung cancer deaths, and 30 percent of all cancer deaths.

Cigarette smoking during pregnancy accounts for 20 to 30 percent of low birth weight babies,[37] up to 14 percent of preterm deliveries, and about 10 percent of all infant deaths.[59] Passive or involuntary smoking also causes disease, including lung cancer, in healthy nonsmokers and severe respiratory problems in young children and infants. Middle ear infection, the most common illness requiring medical treatment among children, is considerably more common among children whose parents smoke.

Many smoking-related deaths occur before age 65, striking people in the prime of their life. Smoking contributes substantially to chronic morbidity and disability as well. For example, in 1983-85, chronic bronchitis, emphysema, and lung cancer were the main cause of activity limitation (i.e., disability) for nearly 4 per 1000 people in the United States and accounted for almost 3 percent of all activity limitation.[40]

Over the past 25 years, total and per capita cigarette consumption have declined steadily.[59] The prevalence of smoking among adults decreased from 40 percent in 1965 to 29 percent in 1987. Nearly half of all living adults who ever smoked have quit. As a result of decisions to quit smoking or not to start, nearly 800,000 smoking-related deaths were avoided or postponed between 1964 and 1985. The average gain in life expectancy for each avoided or postponed death was 21 years. Between 1986 and the year 2000, almost two million more smoking-related deaths will be postponed or avoided as the result of decisions already made to quit smoking or not to start.

This achievement has few parallels in the history of public health and was accomplished despite the addictive nature of tobacco and the powerful economic forces promoting its use. Today, given the remarkable progress of the past 25 years, it is possible to envision a smoke-free society. But maintaining even the current rate of progress over the next decade will be a challenge.

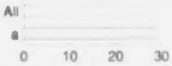
Nearly one-third of all adults in the United States continue to smoke. The decline in smoking has been substantially slower among women than among men. The prevalence of smoking also remains disproportionately high among blacks, blue-collar workers, and people with fewer years of education. To further reduce the prevalence of smoking, new approaches and intensified efforts are needed to discourage young people from starting to smoke and to increase the number of smokers who quit. Impediments to achieving further progress in reducing the prevalence of tobacco use include the addictive nature of tobacco; the high rate of postcessation relapse; the fact that tobacco products, particularly cigarettes, are among the most heavily advertised products in society; and the prominent role of tobacco in the agricultural economy of several States.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

3.1* **Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)**

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
3.1a	**Blacks**	**163**	**115**	

Baseline data source: National Vital Statistics System (special analysis), CDC.[72,73]

*For commentary, see Objective 15.1 in *Heart Disease and Stroke*. This objective also appears as Objective 1.1 in *Physical Activity and Fitness* and as Objective 2.1 in *Nutrition*.

3.2* **Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)**

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

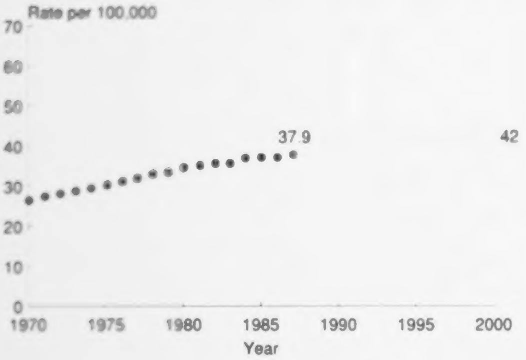


Fig. 3.2

Age-adjusted lung cancer death rate

Cancer is the second leading cause of death in the United States, and more deaths occur from lung cancer than from any other type. Approximately 142,000 Americans are expected to die in 1990 from lung cancer.[2]

Lung cancer is rare in individuals who have never smoked. Cigarette smoking is the major cause of lung cancer and far outweighs all other risk factors in its effect.[59] Approximately 90 percent of the lung cancer cases in men and 79 percent in women are attributable to cigarette smoking.[59] Lung cancer incidence risk is proportional to the amount smoked daily and the duration of time smoked. Smokers who smoke more than two packs per day have lung cancer mortality rates 15 to 25 times greater than that of individuals who have never smoked.[2] Cessation of cigarette smoking results in a gradual decrease in lung cancer risk. After 10 to 20 years of cessation, lung cancer rates for former smokers approach the rates of lifelong nonsmokers.

Among men, lung cancer death rates began to climb sharply in the 1930s, approximately 20 to 30 years after men began smoking in large numbers. A nearly identical increase in lung cancer deaths among women began in the 1960s, approximately 20 to 30 years after the post-World War II surge in women's smoking. As a result of the declining prevalence of smoking among men, lung cancer death rates for men have begun to level off and are expected to begin to decline in 1990.[7] Among women, lung cancer death rates continue to increase and, in 1986, surpassed breast cancer as the leading cause of cancer death. Women now have an incidence of lung cancer nearly identical to that of men 30 years ago. The rising lung cancer death rate for women is expected to peak around 2010.[7]

No effective treatment for lung cancer is available. Nearly 90 percent of lung cancer patients die within 5 years of diagnosis. Survival improves modestly when lung cancer is detected at an early, localized stage, but few cases are detected early. Prevention is the key to reducing lung cancer morbidity and mortality. Intensified efforts to prevent the initiation of smoking by youth and to increase cessation among those who currently smoke are the primary ways to reverse the upward trends in lung cancer incidence and lung cancer mortality. Intervention activities initiated in the 1990s are unlikely to affect either lung cancer incidence or death rates until after the year 2000, given the long latency phase. To a large extent, the lung cancer death rates of the 1990s will reflect the intervention activities and smoking patterns of the 1970s. In 1985, the National Cancer Institute projected that, without major changes in the trends for smoking initiation, smoking prevalence, and cigarette tar content, the lung cancer death rate (age-adjusted to the 1970 U.S. population) would be about 54 per 100,000 in the year 2000.[7] With additional intervention to accelerate the reduction in smoking prevalence, it was suggested that a death rate of 53.2 per 100,000 could be achieved. Scaling this projection to a 1940 U.S. population base yields a year 2000 target of 42 per 100,000.

Although cigarette smoking is the major determinant of lung cancer risk, exposure to radon decay products, asbestos, or ionizing radiation (X or gamma rays) can also increase lung cancer risk.[59] The combination of cigarette smoking and asbestos exposure increases the risk of lung cancer fiftyfold.[45] Chronic exposure to environmental tobacco smoke also increases the risk of lung cancer in never smokers.[57]

*This objective also appears as Objective 16.2 in *Cancer*.

3.3 Slow the rise in deaths from chronic obstructive pulmonary disease to achieve a rate of no more than 25 per 100,000 people. (Age-adjusted baseline: 18.7 per 100,000 in 1987)

Note: Deaths from chronic obstructive pulmonary disease include deaths due to chronic bronchitis, emphysema, asthma, and other chronic obstructive pulmonary diseases and allied conditions.

Baseline data source: National Vital Statistics System, CDC.

Chronic obstructive pulmonary disease, which is characterized by permanent airflow obstruction, is the fifth leading cause of death in the United States and is a major cause of chronic morbidity and disability. Nearly 80,000 people die each year due to this condition, and cigarette smoking accounts for 82 percent of these deaths.[59] Death rates from chronic obstructive pulmonary disease have paralleled those for lung cancer and have increased progressively over the last 25 years. If the 1978-87 trend continues, the death rate for chronic obstructive pulmonary disease will reach 26 to 28 deaths per 100,000 in the year 2000.

Normally, ventilatory function increases during childhood, reaches a peak during adolescence, then declines gradually with advancing age. In cigarette smokers who develop symptomatic airflow obstruction, a similar loss of function takes place, but at a much more rapid rate, eventually resulting in shortness of breath and limitation of activity. Evidence of impairment begins in some cigarette smokers as early as a few years

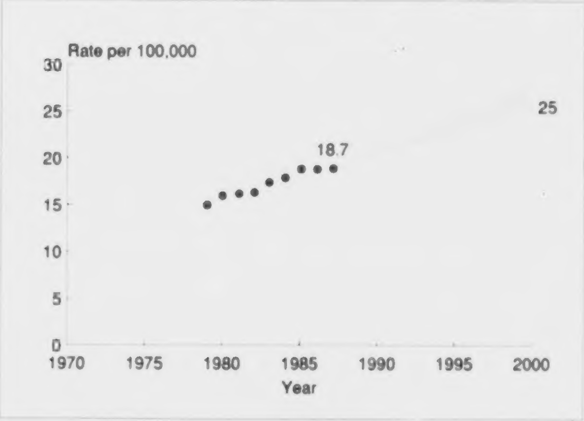


Fig. 3.3

Age-adjusted chronic obstructive pulmonary disease death rate

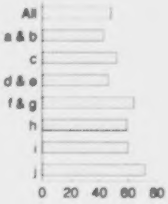
after initiation. With cessation of smoking, the rate of functional loss declines, but lost function cannot be regained. However, timely smoking cessation can prevent the development of symptomatic disease.

Death rates alone understate the public health impact of this condition. Death occurs only after an extended period of disability and many of those disabled by chronic obstructive pulmonary disease die from other causes. In 1988, nearly 13 million people reported having chronic bronchitis or emphysema.[51] In 1979-81, chronic bronchitis and emphysema caused 169 million days of restricted activity per year, or nearly 2 months of restricted activity a year for each affected person.[48] In 1983-85, chronic bronchitis and emphysema accounted for 2.4 percent of all activity limitation due to chronic conditions.[40]

Risk Reduction Objectives

3.4* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*	*Percent Decrease*
3.4a	**People with a high school education or less aged 20 and older**	**34%**	**20%**	
3.4b	**Blue-collar workers aged 20 and older**	**36%**	**20%**	
3.4c	**Military personnel**	**42%**[†]	**20%**	
3.4d	**Blacks aged 20 and older**	**34%**	**18%**	
3.4e	**Hispanics aged 20 and older**	**33%**[‡]	**18%**	
3.4f	**American Indians/Alaska Natives**	**42-70%**[§]	**20%**	
3.4g	**Southeast Asian men**	**55%**[+]	**20%**	
3.4h	**Women of reproductive age**	**29%**[††]	**12%**	
3.4i	**Pregnant women**	**25%**[‡‡]	**10%**	
3.4j	**Women who use oral contraceptives**	**36%**[§§]	**10%**	

[†] *1988 baseline*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1979-87 estimates for different tribes*

[+] *1984-88 baseline*

[††] *Baseline for women aged 18-44*

[‡‡] *1985 baseline*

[§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

Baseline data sources: National Health Interview Survey, CDC; Worldwide Survey of Substance Abuse and Health Behavior Among Military Personnel, U.S. Department of Defense; Hispanic Health and Nutrition Examination Survey, CDC; for American Indians and Alaska Natives, CDC 1987; for Southeast Asian men, local surveys[33,41,68]; for women who use contraceptives, Behavioral Risk Factor Surveillance System, CDC.[29]

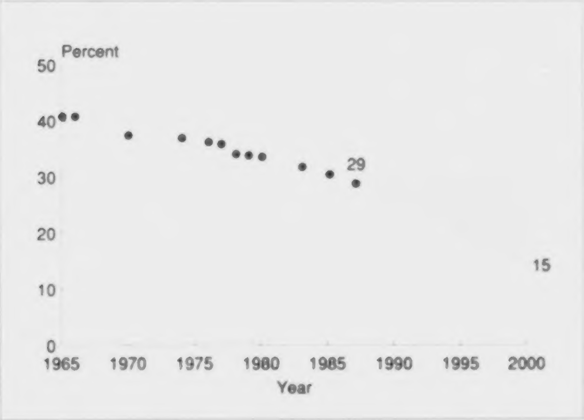


Fig. 3.4

Prevalence of cigarette smoking among people aged 20 and older

Among people aged 20 and older, cigarette smoking prevalence has been declining steadily at a rate of 0.5 percentage points per year since 1965. The decline has been substantially slower among women.[59] By the late 1990s, smoking rates for women will probably exceed the rates for men. In 1987, smoking prevalence for the entire population aged 20 and older was 29 percent. Projection of the 1974 through 1985 trend suggests that smoking prevalence will be 22 percent in the year 2000.[63] The target of 15 percent, although challenging, is believed attainable with intensified effort, given the changing social attitudes regarding tobacco use.

The 1987 prevalence of cigarette smoking among people with a high school education or less was 34 percent. The rate of decline in smoking prevalence since 1965 for this group has been approximately 0.2 percentage points per year.[59] If the current trend continues, smoking prevalence among people with a high school education or less will be approximately 31 percent in the year 2000. Accelerating the rate of change for this population presents a major challenge to public health professionals, and the target of 20 percent reflects this challenge.

Smoking prevalence varies by occupational category. Smoking prevalence is consistently higher among blue-collar and service workers than among white-collar professionals. In 1987, 26.1 percent of white-collar males smoked cigarettes as did 26.6 percent of white-collar females.[61] Among blue-collar workers, 36.1 percent of males and 36.6 percent of females smoked. The unusual similarity of the data between men and women within the blue- and white-collar working categories suggests that the work environment is an important influence on smoking status.

The prevalence of cigarette smoking has been much higher among military personnel than among the overall population. Smoking is inversely associated with military rank, and is at least twice as high among enlisted personnel as among commissioned officers. According to worldwide surveys of substance abuse among military personnel conducted by the Department of Defense, smoking prevalence has fallen from 52 percent in 1980 to 42 percent in 1988. If the 1980 through 1988 trend continues, smoking prevalence among military personnel will be roughly 26 percent in the year 2000. The target of 20 percent is believed attainable given increased antismoking activities within the Department of Defense.[59,76]

Thirty-four percent of blacks smoked in 1987: 41 percent of men and 29 percent of women. Smoking prevalence declined more rapidly among blacks than among whites from 1974 through 1985, indicating that the gap is closing, albeit slowly.[24] Setting a target of 20 percent for blacks would represent an equivalent achievement for whites and blacks by the year 2000. Therefore, the target for blacks is set two percentage points lower at 18 percent.

Reliable data on smoking trends among Hispanics are not available, but current smoking prevalence estimates for Hispanics exceed those for the U.S. population overall. The 1982-84 Hispanic Health and Nutrition Examination Survey (HHANES) estimated smoking prevalence among Hispanics as about 40 percent for men and 26 percent for women. Thus the prevalence among Hispanics is close to that reported for blacks. Accordingly, the target set for Hispanics is equivalent to the target for blacks, 18 percent. Although smoking rates for Hispanic women are considerably lower than the rates for Hispanic men, special efforts to prevent the initiation of smoking among Hispanic women may be warranted. A birth-cohort analysis of HHANES data showed that smoking rates had increased among successive cohorts of women whereas they had decreased among successive cohorts of men.[22]

Prevalence of smoking varies considerably among Native American groups. Smoking prevalence is highest among Northern Plains Indians (42 to 70 percent) and Alaska Natives (56 percent).[11] American Indians from the Southwest report much lower smoking rates, ranging from 13 to 28 percent. A preliminary analysis of data from the 1987 National Medical Expenditure Survey showed a smoking prevalence of 33 percent (38 percent and 28 percent for males and females, respectively) among the 6,557 respondents who were eligible for care through the Indian Health Service.[75] The target of 20 percent was set toward the low end of the range of these estimates.

No reliable national estimates of smoking prevalence among Asian Americans are available, although surveys have been conducted in a few geographic regions. Smoking prevalence among new immigrant Asian groups may be high, consistent with rates in their country of origin. Studies of Southeast Asian refugees in California conducted between 1984 and 1988 reported smoking rates of 55 to 65 percent for Vietnamese men,[33] 71 percent for Cambodian men,[68] and 92 percent for Laotian men.[41] In general, however, smoking rates among more established Asian American groups are relatively low. For example, smoking prevalence estimates from Hawaii's 1986 Behavior Risk Factor Survey were 29 percent for Japanese and 25 percent for Filipinos compared with 29 percent for whites and 30 percent for the United States overall. About 34 percent of all Japanese Americans and about 17 percent of all Filipino Americans reside in Hawaii.

Women of reproductive age are targeted as a primary prevention strategy to reduce the prevalence of smoking during pregnancy. Approximately 29 percent of women aged 18 through 44 smoked cigarettes in 1987.[50]

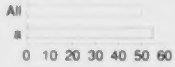
National data on smoking during pregnancy are scarce and estimates vary. The 1980 National Natality Survey reported that 29 percent of all married women smoked during pregnancy.[66] In 1982, the National Survey of Family Growth found that 32 percent of women aged 15 through 44 smoked during their most recent pregnancy. In the 1985 National Health Interview Survey, 25 percent of women aged 18 through 44 who had given birth within the past 5 years smoked throughout their pregnancy.[49] Limited data suggest that the prevalence of smoking during pregnancy has been decreasing for some but not all groups. Between 1967 and 1980, smoking rates during pregnancy among teenagers remained fairly constant at 38 percent for whites and 27 percent for blacks.[36] Among women over age 20, smoking during pregnancy declined from 34 to 11 percent among black women and declined from 40 to 25 percent among white women. Among white smokers with less than 12 years of education, the prevalence of smoking during pregnancy declined from 48 percent to 43 percent, compared to a decline from 34 to 11 percent for women with 16 or more years of education. In general, women in the lowest age and socioeconomic categories have the highest likelihood of smoking during pregnancy. The National Maternal and Infant Health Survey, begun in 1988, will provide reliable estimates of smoking during pregnancy for the late 1980s. In addition, maternal smoking data from birth certificates will be available for analyses of the effect of smoking on certain pediatric conditions.[25] (See also Objective 14.10 in *Maternal and Infant Health.*)

Women who use oral contraceptives and smoke cigarettes have an increased risk of heart attack and stroke. In 1976-80, 44 percent of women using oral contraceptives smoked cigarettes.[36] In 1983, the Behavioral Risk Factor Surveillance System found that 36 percent of oral contraceptive users aged 18 through 44 smoked cigarettes.[29] The year 2000 target of 10 percent is believed attainable given the apparent downward trend.

*This objective also appears as Objective 15.12 in *Heart Disease and Stroke* and as Objective 16.6 in *Cancer*.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15 percent have become regular cigarette smokers by age 20. (Baseline: 30 percent of youth had become regular cigarette smokers by ages 20 through 24 in 1987)

Special Population Target

	Initiation of Smoking	*1987 Baseline*	*2000 Target*	*Percent Decrease*
3.5a	**Lower socioeconomic status youth**[†]	**40%**	**18%**	

[†] *As measured by people aged 20-24 with a high school education or less*

Baseline data source: National Health Interview Survey, CDC.

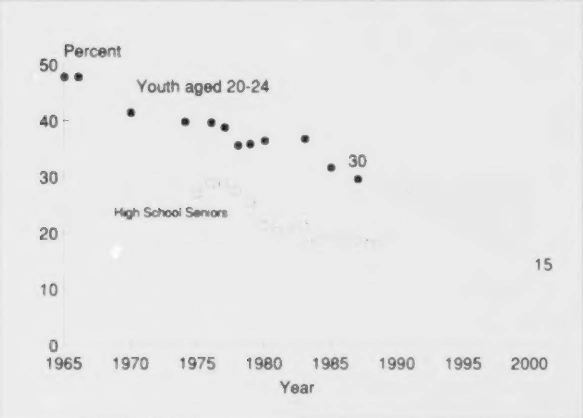


Fig. 3.5

Cigarette smoking prevalence among people aged 20 through 24 and high school seniors

Reducing the initiation of cigarette smoking by youth is an important national priority. If 29 percent of the 70 million children now living in the United States start smoking and continue to smoke cigarettes as adults, then at least 5 million of them will die of smoking-related diseases. Birth cohort studies of ever-smoking rates indicate that initiation is more sensitive to intervention than is quitting behavior. Preventing the initiation of smoking by youth should be a major focus of efforts to reduce the prevalence of cigarette smoking.

Experimentation with smoking is occurring at younger and younger ages and initiation now occurs almost entirely during adolescence. In 1986 and 1987, two surveys of high school students found that for those who had ever smoked, about one-quarter had smoked their first cigarette by the 6th grade, one-half by the 8th grade, three-fourths by the 9th grade, and 94 percent by the 11th grade.5,35

In 1988, the National Household Survey on Drug Abuse found that 23 percent of adolescents aged 12 through 17 had smoked at least one cigarette during the preceding year and 12 percent had smoked within the preceding month.[52] In 1987, the National Adolescent Student Health Survey found that 51 percent of 8th graders (aged 13 and 14) and 63 percent of 10th graders (aged 15 and 16) reported having tried cigarettes.[5] Sixteen percent of 8th graders and 26 percent of 10th graders reported having smoked a cigarette during the preceding month, and 8 percent of 8th graders and 18 percent of 10th graders had smoked a pack or more within the preceding month. Annual data from the High School Seniors Survey reveal that reported daily smoking among high school seniors decreased from a peak prevalence of 29 percent in 1976 to 19 percent in 1989.[6,34,35] However, most of the decline occurred between 1977 and 1981, and smoking prevalence among high school seniors has hovered at 18 to 19 percent since 1984.

Differentiating between experimentation and initiation is difficult, and youth surveys all have limitations. The Household Survey on Drug Abuse includes only about 2,000 to 3,000 youth aged 12 through 18, too few for precise estimates. High school surveys do not gather information from young people who have dropped out of school. In 1986-87, 15 percent of whites, 21 percent of blacks, and 37 percent of Hispanics aged 20 through 24 had not finished high school.[8] This nonsurveyed group is known to have a higher smoking rate.[64]

Most adult smokers started to smoke regularly before age 20 and almost all had started by age 24. Accordingly, the proportion of regular smokers in the 20 through 24 age group is considered the most valid and reliable measure of smoking initiation by youth and is used as a proxy measure in this objective. The primary limitation of this measure is the delay of at least 5 years required to reflect actual change in youth behavior.

In 1987, smoking prevalence among people aged 20 through 24 was 30 percent, having decreased an average of 0.69 percentage points per year since 1965.[59] At this rate of decline, smoking prevalence among people aged 20 through 24 is expected to be 20 percent in the year 2000. Because there should be a major emphasis on preventing initiation and because 1987 data suggest that a decline in initiation may have already begun among previously resistant groups, a target of 15 percent has been set for the year 2000. This represents a halving of the 1987 prevalence and will be a major achievement if accomplished.

In 1987, blacks aged 20 through 24 had a smoking prevalence of 26 percent. The rate of decline was 0.79 percentage points per year since 1965, with a substantial drop of 13 percentage points occurring since 1983. This decline exceeds that reported for any other group; hence no special target for black youth has been established.

The 1987 prevalence of cigarette smoking was 40 percent among people aged 20 through 24 whose education had not continued beyond high school. Between 1965 and 1985, initiation among young men in this group declined by 1 percentage point per year but remained constant for young women. However, 1987 data showed the first major decline in smoking prevalence among young women in this age and education category, and the drop was a substantial 5 percentage points from the 1985 estimate. Consequently, the current trend is assumed to be the same for young men and women, at a rate of decrease of 1 percentage point per year. This trend would yield a prevalence of 27 percent in the year 2000 for low socioeconomic status youth. The target for this special population is set at 18 percent and, although challenging, should be attainable given the emphasis placed on prevention of smoking and the increase in school programs in recent years.

3.6 Increase to at least 50 percent the proportion of cigarette smokers aged 18 and older who stopped smoking cigarettes for at least one day during the preceding year. (Baseline: In 1986, 34 percent of people who smoked in the preceding year stopped for at least one day during that year)

Baseline data source: Adult Use of Tobacco Survey, CDC.

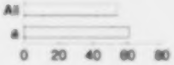
Stopping regular tobacco use is a difficult process for many people, involving multiple attempts and multiple stages. This objective targets one of the first steps in that process, attempting to quit. These attempts are highly predictive of eventual success, and much is known about what motivates people to quit. However, motivation to quit often is unrelated to ability to maintain abstinence. To achieve a major impact on smoking prevalence, increased attention must also be given to relapse prevention and the maintenance of abstinence.

According to the 1986 Adult Use of Tobacco Survey, 34 percent of people who smoked in the last year quit for one day or more during the year and 18 percent of the attempts resulted in abstinence for at least 3 months.[59] Blacks were more likely to quit than whites (40 percent versus 34 percent), but they were considerably less likely to maintain abstinence for at least 3 months (12 percent versus 20 percent). People with less than a high school education were not as likely to make a quit attempt as people with a college degree (33 percent versus 37 percent), nor were they as likely to be successful in maintaining abstinence (16 percent versus 21 percent).

The proportion of people who ever smoked and who are currently abstinent is also important in describing population change with regard to smoking cessation. The quit ratio is the ratio of former smokers in the population to ever smokers. By 1985, the quit ratio for the United States population had increased from just under 30 percent in 1965 to 45 percent.[59] In 1985, the quit ratio among blacks had increased to almost 32 percent, with most of the increase occurring since the mid-1970s. For black men, the rate of change has averaged 1.15 percentage points per year since then, but has been considerably slower for black women, averaging only 0.27 percentage points per year. Among people with a high school education or less, the quit ratio was 40 percent in 1985; in contrast, the quit ratio for people who attended at least some college was 53 percent. These data suggest that, although efforts to encourage cessation and facilitate successful abstinence should be continued for all groups of smokers, efforts to reach and assist blacks, especially black women, and people with a high school education or less should be intensified.

3.7 Increase smoking cessation during pregnancy so that at least 60 percent of women who are cigarette smokers at the time they become pregnant quit smoking early in pregnancy and maintain abstinence for the remainder of their pregnancy. (Baseline: 39 percent of white women aged 20 through 44 quit at any time during pregnancy in 1985)

Special Population Target

	Cessation and Abstinence During Pregnancy	*1985 Baseline*	*2000 Target*	*Percent Increase*
3.7a	**Women with less than a high school education** [†] *Baseline for white women aged 20-44*	28%[†]	45%	

Baseline data source: Fingerhut, Kleinman, and Kendrick 1990.

Maternal cigarette smoking during pregnancy retards fetal growth and is associated with an increased incidence of low birth weight, prematurity, miscarriage, stillbirth, sudden infant death syndrome, and infant mortality.[59] In the United States, 20 to 30 percent of the incidence of low birth weight[37] and up to 14 percent of preterm deliveries are attributable to maternal cigarette smoking.[59]

Smoking cessation prior to or early during pregnancy can reverse the reduction in infant birth weight associated with maternal smoking. If all pregnant women refrained from smoking, the number of fetal and infant deaths would be reduced by an estimated 10 percent, saving about 4,000 infants each year.[38]

The 1980 National Natality Survey, conducted among a national sample of married mothers of live born infants, found that among women who smoked, 18 percent of white women quit smoking during pregnancy compared with 13 percent of black women. Between 1967 and 1980, there was an increase in the proportion of white women quitting smoking during pregnancy (11 percent to 16 percent), while among blacks the proportion that quit actually declined (17 percent to 11 percent).[36] Among white smokers with less than 12 years of education, there was relatively little change in the proportion that quit during pregnancy (11 percent to 9 percent), but among smokers with 16 years or more of education, the proportion more than doubled (12 percent to 27 percent).

Intervention studies indicate that up to 27 percent of pregnant women who smoke at the time of enrollment into prenatal care may quit smoking for the duration of their pregnancy with intensive smoking cessation counseling and followup.[86] Use of a serialized self-help program for pregnant women recently yielded a quit rate of 26 percent.[21]

Analysis of a followback of the women who reported a recent pregnancy in the 1985 National Health Interview Survey demonstrated that 39 percent of white women who were smokers at the start of their pregnancy quit.[24] This objective seeks to increase quitting during pregnancy by 50 percent. While challenging, this objective has been the basis of several recent smoking and health initiatives, and its high profile in the health community makes it attainable. (See also Objective 3.4i and Objective 14.10 in *Maternal and Infant Health.*)

Smoking cessation programs for pregnant women should also address the issue of postpartum relapse. The National Health Interview Survey Followback Study found that only one-third of the women who quit smoking during pregnancy were still abstinent 1 year postpartum, with the majority relapsing in the first 3 months after delivery.

3.8 Reduce to no more than 20 percent the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home. (Baseline: More than 39 percent in 1986, as 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household)

Note: Regular exposure to tobacco smoke at home is defined as the occurrence of tobacco smoking anywhere in the home on more than three days each week.

Baseline data source: Adult Use of Tobacco Survey, CDC.

Environmental tobacco smoke is a cause of disease, including lung cancer, in healthy nonsmokers, and is a significant health risk for children.[53,57] The children of parents who smoke are more likely to develop lower respiratory tract infections, to be hospitalized or see a doctor for these conditions during the first year of life, and to develop middle ear infections than children of parents who do not smoke. Parental smoking may compromise lung function in young children and the developing lungs of the growing child. It may also contribute to the rise of chronic airflow obstruction later in life.[53,57]

The major source of smoke exposure for young children is their home. Both passive smoking and being nursed by a smoking mother contribute to the amount of tobacco constituents absorbed by infants.[30,71] In the most recent and comprehensive study of passive smoke exposure of infants, the amount smoked in the same room or vehicle or even the same house as the infant was the major predictor of infants' urinary cotinine levels.[30] Smoking around the infant and putting the infant in a room where smoking occurred recently increased the infant's absorption of environmental tobacco smoke. The authors concluded that "simply blowing smoke away from the infant, going into another room to smoke, or increasing the ventilation in a room will probably not prevent the infant from eventually absorbing tobacco smoke." If people who have contact with children must smoke, they should smoke outdoors or in areas that do not contribute air to places where the child might be.[30,77]

Although a baseline estimate for this objective is not yet available, 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household in 1986.[60] The proportion of children aged 6 and younger exposed to tobacco smoke at home is almost certainly higher.

3.9 Reduce smokeless tobacco use by males aged 12 through 24 to a prevalence of no more than 4 percent. (Baseline: 6.6 percent among males aged 12 through 17 in 1988; 8.9 percent among males aged 18 through 24 in 1987)

Special Population Target

	Smokeless Tobacco Use	*1986-87 Baseline*	*2000 Target*
3.9a	**American Indian/Alaska Native youth**	**18-64%**	**10%**

Note: For males aged 12 through 17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18 through 24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

Baseline data sources: For males aged 12 through 17, National Household Survey on Drug Abuse, ADAMHA; for males aged 18 through 24, National Health Interview Survey, CDC; for American Indian and Alaska Native youth, CDC 1988.

Smokeless tobacco includes primarily moist or dry snuff and chewing tobacco. Oral cancer has been shown to occur several times more frequently among smokeless tobacco users than among nonusers and may be 50 times as frequent among long-term snuff users.[57] All smokeless tobacco products contain substantial amounts of nicotine; their use can support nicotine dependence and may lead to cigarette use.

The consumption of smokeless tobacco in the United States increased 40 percent between 1970 and 1986. Most new users of smokeless tobacco products are adolescent males. In 1988, 6.6 percent of males aged 12 through 17 had used some form of smokeless tobacco in the preceding month.[52] The prevalence of smokeless tobacco use among males aged 18 through 24 was 8.9 percent in 1987.[50]

Between 1970 and 1986, the prevalence of snuff use increased fifteenfold and chewing tobacco use increased more than fourfold among men aged 17 through 19.[59] In contrast, the prevalence of use among men aged 50 and older declined by almost half for each type of product. Attaining the target of 4 percent set for this objective will be a challenge as it requires reversing an upward trend.

Smokeless tobacco use among women was less than 1 percent in 1987.[50] Use of smokeless tobacco by minority groups varies. Black and Hispanic adolescent populations report lower usage rates than whites. In contrast, Native American schoolchildren have reported prevalences of regular smokeless tobacco use ranging from 18 to 64 percent.[12]

Services and Protection Objectives

3.10 Establish tobacco-free environments and include tobacco use prevention in the curricula of all elementary, middle, and secondary schools, preferably as part of quality school health education. (Baseline: 17 percent of school districts totally banned smoking on school premises or at school functions in 1988; antismoking education was provided by 78 percent of school districts at the high school level, 81 percent at the middle school level, and 75 percent at the elementary school level in 1988)

Baseline data source: National School Boards Association 1989.

Tobacco-free environments in schools reinforce student knowledge of the health hazards of tobacco use and exposure to environmental tobacco smoke, promote a tobacco-free environment as the norm, and discourage students from starting to use tobacco. In 1988, a survey of 2,000 school districts found that 95 percent had a written policy or regulation on tobacco smoking in schools, and 17 percent totally banned smoking (i.e., no smoking allowed by anyone on school premises or at school functions).[13,54]

School-based health education programs have demonstrated that they can at least delay the onset of tobacco use among adolescents.[27,59] Tobacco use prevention can be included in the curriculum as a stand-alone program, as part of a substance abuse prevention program, or as part of a school health education curriculum.[27,59] However it is presented, a minimum of two 5-session blocks of classes on tobacco prevention, delivered in separate school years between 6th and 9th grade is recommended.[27]

Effective programs emphasize the short-term consequences of tobacco use (e.g., decreased stamina, stained teeth, foul-smelling breath and clothes, and the potential for addiction).[27,59] Social factors influencing use (e.g., parents, peers, and media) and the social consequences of use (e.g., most adolescents disapprove of peers who use tobacco) should be emphasized.[27,59] Effective programs also include an experiential component. Students can be taught to resist pressure exerted by peers or adults to use tobacco through modeling, role play, and guided rehearsal of appropriate refusal skills.[27]

Adequate teacher training is vital to the success of prevention programs. Peer involvement can also contribute to optimal results. A peer leader to assist the trained teacher with the curriculum is ideal. Parental support for tobacco prevention education is also important, and parental involvement may contribute to program success among younger students (5th grade and below).[27]

Additional emphasis needs to be placed on the cessation of smoking and smokeless tobacco use among youth. One particularly important goal is preventing the transition from experimental to regular use. As with prevention, emphasis on the short-term physiological consequences of tobacco use and the social factors influencing behavior may be more effective than information on the long-term health consequences of tobacco use in helping adolescents stop.[59]

In 1988, antismoking education was provided by 78 percent of school districts at the high school level, 81 percent at the middle/junior high school level, and 75 percent at the elementary school level.[54] The nature of the antismoking education provided is unknown. A second 1988 survey of randomly selected school districts in a small sample of States found that whereas 98 percent of the districts reported that their health curriculum included a review of the health hazards of cigarette smoking, only 83 percent included a review of the health hazards of smokeless tobacco use.[16] Furthermore, although about 70 percent of the districts addressed these topics in 7th through 9th grade, these topics were most often addressed in 10th grade (74 percent) and were covered in 5th and 6th grade in only half of the districts.

Optimally, tobacco use prevention education should be included as part of quality school health education. For a definition of quality school health education, see *Educational and Community-Based Programs.*

3.11 Increase to at least 75 percent the proportion of worksites with a formal smoking policy that prohibits or severely restricts smoking at the workplace. (Baseline: 27 percent of worksites with 50 or more employees in 1985; 54 percent of medium and large companies in 1987)

Baseline data sources: For worksites with 50 or more employees, National Survey of Worksite Health Promotion Activities, ODPHP; for medium and large companies, Bureau of National Affairs.

Smoking in the workplace has become an important public health issue in recent years as the health effects of exposure to environmental tobacco smoke have been documented.[53,57] Separation of smokers and nonsmokers within the same airspace may reduce, but does not eliminate, the exposure of nonsmokers to environmental tobacco smoke.[53,57]

Epidemiologic studies have shown an increased risk of lung cancer in nonsmokers chronically exposed to tobacco smoke. Nonsmokers married to smokers have a 30-percent higher risk of lung cancer than do nonsmokers married to nonsmokers. For adults living in households where no one smokes, the workplace is the greatest source of environmental tobacco smoke exposure.[15] Employees exposed to environmental tobacco smoke in the work environment are also at greater risk of developing small airways dysfunction than are nonexposed employees.[85] Small airways disease, which is the first pathological change seen in beginning smokers,[55] may increase the risk of developing disabling chronic airways obstruction.[32]

An increasing number of employers have instituted policies to control smoking in the workplace. While some policies and control measures have been adopted voluntarily, others have resulted from legislation or regulation at the Federal, State, or local level that restricts or prohibits smoking in public and/or private worksites. For example, as a result of Federal regulations issued in 1986, smoking is restricted to designated areas in most Federal workplaces. Agencies may establish more stringent policies on smoking, and some now provide smoke-free environments.

As of 1988, 31 States had laws to restrict smoking in public workplaces and 13 States had laws to require various levels of smoking restriction in private-sector worksites (see Objective 3.12). In addition, a growing number of city and county laws restrict smoking in private businesses. These laws have encouraged and supported initiatives by private businesses to restrict smoking.[59]

In 1985, a national survey of worksites found that 27 percent of worksites with 50 or more employees had formal smoking policies.[62] A 1986 survey found that 36 percent of companies had a workplace smoking policy.[9] A repeat survey in 1987 yielded an estimate of 54 percent; 63 percent of companies with 1,000 or more employees and 52 percent with less than 1,000 employees had a smoking policy.[9] Smaller companies are less likely to have worksite smoking policies,[15] and this lack of protection is important because small companies employ a substantial proportion of the Nation's workforce.

3.12 Enact in 50 States comprehensive laws on clean indoor air that prohibit or strictly limit smoking in the workplace and enclosed public places (including health care facilities, schools, and public transportation). (Baseline: 42 States and the District of Columbia had laws restricting smoking in public places; 31 States restricted smoking in public workplaces; but only 13 States had comprehensive laws regulating smoking in private as well as public worksites and at least 4 public places, including restaurants, as of 1988)

Baseline data source: Office on Smoking and Health, CDC.

Restrictions on smoking in public places and at work are growing in number and comprehensiveness. Although the goal of these restrictions is to protect individuals from the consequences of involuntary tobacco smoke exposure, they may also help to reduce smoking prevalence by changing the attitudes and behavior of current and potential smokers.[59]

As of October 1988, 42 States and the District of Columbia had laws restricting smoking in public places. A public place usually is defined as any enclosed area to which the public is invited or in which the public is permitted.[59] This broad definition encompasses a diverse range of facilities that usually includes Government buildings, schools, health care facilities, public transportation vehicles and terminals, retail stores and service establishments, banks, theaters, auditoriums, sports arenas, reception areas, and waiting rooms. Laws do differ, however, in their operational definition of public place.[59]

To reduce health risks, State laws should be more comprehensive than those currently in place in most jurisdictions. As of October 1988, only 13 States restricted smoking in private as well as public worksites and at least 4 public places, including restaurants. Clean indoor air laws have been categorized on a restrictiveness scale as follows: no statewide restrictions—8 States; nominal restrictions (smoking regulated in 1 to 3 public places, excluding restaurants and private worksites)—6 States; basic restrictions (smoking regulated in 4 or more public places, excluding restaurants and private worksites)—11 States; moderate restrictions (smoking regulated in restaurants, but not private worksites)—13 States; and extensive restrictions (smoking regulated in private worksites)—13 States.[59]

Recently adopted laws are more likely to include three provisions that strengthen the position of nonsmokers: (1) protection against discrimination for supporters of worksite smoking policies, (2) priority given to the wishes of nonsmokers in any disagreement about the designation of an area as smoking or nonsmoking, and (3) permission for cities and counties to enact more stringent ordinances.[59] Laws enacted in the future should incorporate such provisions.

3.13 Enact and enforce in 50 States laws prohibiting the sale and distribution of tobacco products to youth younger than age 19. (Baseline: 44 States and the District of Columbia had, but rarely enforced, laws regulating the sale and/or distribution of cigarettes or tobacco products to minors in 1990; only 3 set the age of majority at 19 and only 6 prohibited cigarette vending machines accessible to minors)

Note: Model legislation proposed by DHHS recommends licensure of tobacco vendors, civil money penalties and license suspension or revocation for violations, and a ban on cigarette vending machines.[10]

Baseline data source: CDC 1990.

Current data indicate that four out of five smokers begin smoking before the age of 21. Two-thirds of men who have ever used smokeless tobacco started before age 21. Moreover, preadolescents are known to experiment with both cigarettes and smokeless tobacco. Given the high percentage of tobacco users who begin before adulthood, prevention efforts must focus on children and young adolescents. Individuals who start smoking early have more difficulty quitting, are more likely to become heavy smokers, and are more likely to develop a smoking-related disease. Many adolescents who smoke do not understand the nature of tobacco addiction and are unaware of, or underestimate, the important health consequences of smoking.[59]

To protect children and adolescents, appropriate public health policies must be established for the advertisement, sale, and distribution of tobacco products. These policies should reduce children's and adolescents' opportunities to experiment with tobacco products and develop a pattern of regular use by making these products less available.[59]

Strict observance of prohibitions against the sale of tobacco to minors may be the most powerful means for reducing the initiation of smoking by children.[59,67] Purchases from retailers or vending machines appear to be the main source of cigarettes for children. Restrictions on child tobacco use are fewer now than at any time in many past decades, despite what is known about the dangers of tobacco use, its addictive nature, and the early age of initiation. This situation is in sharp contrast to virtually all other tobacco-related public policy measures, which have been strengthened since the release of the 1964 Surgeon General's Report.[59]

All States should have in place, and enforce, State laws requiring at least age 19 as the minimum age for purchase of tobacco products. An age cut-off of 19 (as opposed to younger cut-offs) facilitates the elimination of tobacco from high schools. Selling or otherwise providing tobacco products to children and adolescents where age verification is difficult or impossible, such as through vending machines, should not be allowed. As Indian Nations are sovereign and are exempted from many State laws, Tribal Councils should similarly enforce prohibition of tobacco sales to Indian youth living on reservations.

3.14 Increase to 50 the number of States with plans to reduce tobacco use, especially among youth. (Baseline: 12 States in 1989)

Baseline data source: Association of State and Territorial Health Officials.

The health effects of tobacco use are well-documented. Tobacco use also has an impact on the community at large. Tobacco use affects the overall quality of community life by posing health threats to large numbers of people, by increasing disability, by reducing years of productivity, and by diverting resources that could be used for other pressing medical and social problems.

Effective tobacco use prevention and cessation efforts require community action, just as other public health issues usually are addressed at the State and local level. Because social factors strongly influence decisions to quit and the ability to remain tobacco free, the community can—and should—provide an environment that discourages tobacco use. Preventing tobacco addiction among youth emphasizes even more clearly the need for State and local planning.

The purpose of a State plan for prevention and cessation of tobacco use is to identify, and eventually put in place, a system of antitobacco use measures that is responsive to local conditions, and that is effective and ongoing. A wide range of strategies are needed, including educational, behavioral, social, and regulatory measures, all oriented to reducing, and eventually eliminating, tobacco use and its consequences. As outlined in the *Guide to Public Health Practice: State Health Agency Tobacco Prevention and Control Plans*, elements essential to State plans to reduce tobacco use include comprehensive planning, evaluation, funding, and community involvement.

Achieving the goal of a tobacco-free society requires increasing the priority of tobacco use as a public health issue, and improving the community's ability to promote healthier behavior. Through a State plan, tobacco prevention needs can be identified and addressed, resources can be used more efficiently and effectively, and the combined commitment of diverse groups and agencies can generate a high level of awareness of tobacco control as a community issue.

Development of a strong community norm for not using tobacco requires visible and diverse activities which continue over time. For example, a statewide approach to the prevention of tobacco use among youth might include school-based educational efforts, policies that restrict the sale of tobacco products to minors and that limit the enticements for youth to start using tobacco, and economic disincentives to purchase tobacco, such as State and local excise taxes.

Other objectives in this chapter describe school-based educational efforts (see Objective 3.10), policies that restrict the sale of tobacco products to minors (see Objective 3.13), and policies that limit the enticements for youth to start using tobacco (see Objective 3.15). Pricing policies that discourage the initiation of tobacco use by youth are another important element of many State plans.

Excise (sales) taxes raise the purchase price of tobacco products and can serve as an economic disincentive for tobacco product consumption. Cigarette price increases primarily affect smoking prevalence; the effect on the number of cigarettes per smoker appears minimal. Adolescents are especially sensitive to price changes in tobacco products. Thus, excise tax increases are an important tool for delaying and preventing the initiation of tobacco use by youth.

Although the short-term effects of an increase in tobacco product excise taxes may be modest, the long-term impact can be substantial. Furthermore, if tax increases are maintained in terms of real dollars, they can continue to discourage generations of youth from initiating tobacco use. In 1985, an analysis of the potential impact of increasing the Federal excise tax on cigarettes from 16 to 32 cents per pack estimated that almost 3.5 million Americans would forego smoking, including more than 800,000 teenagers and almost 2 million people aged 20 through 35.[81] If a 16-cent increase were maintained in real value over time, more than 480,000 premature smoking-induced deaths would be averted for Americans aged 12 and older today.

Excise tax increases offer the added benefit of generating public revenue with relatively low administrative costs. A portion of the funds can be earmarked for tobacco use prevention programs to further deter tobacco use by youth. The capacity to simultaneously raise revenue and enhance public health has made the tobacco excise tax a particularly attractive public policy tool at both Federal and State levels.

The Federal Government has taxed cigarettes since 1864. The Federal excise tax on cigarettes is currently 16 cents per pack, having been raised from 8 cents to 16 cents in 1983, the first increase since 1951. In 1985, Federal excise taxes were imposed on snuff (24 cents per pound) and chewing tobacco (8 cents per pound). These are equivalent to a 1.8-cent tax on a 1.2-ounce can of snuff and a 1.0-cent tax on a 2-ounce pack of chewing tobacco. In addition to the Federal tax, all States, the District of Columbia, 369 towns, and 20 counties currently impose excise taxes on cigarettes.[59] As of July 30, 1990, State excise tax rates ranged from 2 cents per pack in North Carolina to 41 cents in Texas and averaged 22 cents per pack. Increasingly, States also tax the sale of smokeless tobacco. In 1964, only 14 States taxed smokeless tobacco. By 1990, this number had increased to 34.

In real terms, the Federal excise tax on cigarettes decreased by 68 percent from 1964 to 1982, and the average State tax on cigarettes declined by more than 40 percent over the past 15 years. To serve as an effective deterrent over time, excise taxes on tobacco products should be structured to increase or at least not to decrease in real terms. Replacing unit taxes on cigarettes and other tobacco products with equivalent-yield ad valorem taxes would allow revenues to keep pace with inflation-induced increases in product prices.

3.15 Eliminate or severely restrict all forms of tobacco product advertising and promotion to which youth younger than age 18 are likely to be exposed. (Baseline: Radio and television advertising of tobacco products were prohibited, but other restrictions on advertising and promotion to which youth may be exposed were minimal in 1990)

Baseline data source: Federal Trade Commission, reported by the Office on Smoking and Health, CDC.

Public health concern about tobacco advertising is based on the premise that such advertising perpetuates and increases cigarette consumption. Cigarette advertising may increase cigarette consumption by recruiting new smokers, inducing former smokers to relapse, making it more difficult for smokers to quit, and increasing the level of smokers' consumption by acting as an external cue to smoke.[18,80] While the tobacco industry denies that its advertising is targeted to children and adolescents, cigarette advertising is heavy in many magazines with large adolescent readerships.[4,80] Furthermore, tobacco advertisers typically employ image-based ads, which are most effective with young people and have the greatest impact on children whose poor performance in school increases the distance between their ideal and current self-image.[44]

Cigarettes are one of the most heavily advertised and promoted products in the United States.[10] In constant dollars, expenditures for cigarette advertising and promotion have increased threefold since 1975 and continue to grow. The total expenditure for cigarette advertising and promotion in 1988 was $3.3 billion, a 27-percent increase over 1987 expenditures.[10] Many experts consider promotional activities as effective or even more effective than traditional advertising in influencing smoking behavior.[65] The proportion of total expenditures spent on promotional activities (e.g., free samples, sponsorship of events) increased from 26 percent in 1975 to 68 percent in 1988.

Free samples or coupons place tobacco products directly into the hands of the consumer. Although the tobacco industry's voluntary codes prohibit the distribution of cigarette samples to individuals under 21 years of age and the distribution of smokeless tobacco to people younger than 18, widespread violation of these codes is evident.[20]

Tobacco companies also sponsor sporting, cultural, and other special events. Rock concerts, rodeos, skiing competitions, and golf and tennis tournaments help to deliver the youth market to sponsoring tobacco companies, which reinforce their presence by putting brand names on promotional products such as T-shirts and hats. Television coverage of these events broadcasts product names and logos to millions of adolescents for hours at a time.

Tobacco advertising and promotion also adversely affect media coverage of tobacco-related health issues. Studies have shown a significant inverse relationship between magazine and newspaper dependence on tobacco advertising revenue and coverage of smoking and health topics.[59,79] Tobacco sponsorship of organizations and events also appears to discourage organizations from speaking out and educating their constituents about smoking and health.

Preventing the exposure of youth to tobacco advertising and promotion could be accomplished by advertising limitations (e.g., prohibiting tobacco advertising in publications with a substantial teenage readership, prohibiting tobacco sponsorship of sporting events with a substantial teenage and preteenage audience, prohibiting billboards within a certain distance of schools) or by a total ban on tobacco advertising and promotion. Also, prohibiting the use of imagery in ads and allowing only words and a picture of the product itself (i.e., tombstone advertising) would protect minors from the pictorial themes now used to glamorize tobacco use.[4,59,80]

3.16 Increase to at least 75 percent the proportion of primary care and oral health care providers who routinely advise cessation and provide assistance and followup for all of their tobacco-using patients. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986; about 35 percent of dentists reported counseling at least 75 percent of their smoking patients about smoking in 1986)

Baseline data sources: For internists, Wells et al. 1986; for dentists, Secker-Walker et al. 1989.

This objective capitalizes on the unique position of the primary care provider. About 70 percent of adult smokers visit a physician every year. Primary care providers see both motivated and unmotivated users of tobacco, are considered credible sources of health information and advice, and often see patients during a "teachable moment." Furthermore, 71 percent of all heavy smokers surveyed stated that they would stop if their doctor so urged them.[1]

Brief smoking cessation counseling by primary care physicians has been shown to be effective.[39,69] Such counseling may include information about the dangers of tobacco use and the benefits of stopping, personalized cessation advice, selection of a target date, written self-help materials, appropriate referral, and, when indicated, a pharmacologic aid to quitting. Followup visits or telephone calls, especially during the first 4 to 8 weeks, make cessation attempts more likely to succeed.[28,78] Use of office reminder systems can increase both the provision of cessation advice by providers and the rate of quitting among their patients.[17]

The U.S. Preventive Services Task Force recommended that smoking cessation counseling be included as part of the periodic health examination.[78] If every primary care provider offered the brief intervention outlined above to all of their tobacco using patients, then approximately 1 million Americans, over and above the 1.3 million that quit annually, would stop using tobacco in a year.[46,47,69] Advice from all types of primary care providers (e.g., physicians, physician assistants, nurse practitioners, and nurse midwives) and oral health care providers (e.g., dentists, dental hygienists) would reach even more people and serve to repeat the message for many patients.

Although the health benefits of smoking cessation are well-established, physicians frequently fail to advise smokers to quit. In seven studies that relied on physician self-report (including two national surveys of family practitioners), the proportion of smokers counseled to stop smoking ranged from 52 percent to 97 percent.[42] A recent national survey of internists found that 98 percent of internists routinely obtained and recorded the smoking histories of patients new to their practice and 70 percent discussed reducing or stopping tobacco use at every visit with tobacco-using patients.[3] Even lower percentages of smokers counseled were found in three chart audit studies (63 percent) and three consumer surveys (about 40 percent of smokers said they received counseling from a physician).[42] Furthermore, although physicians accurately acknowledge abstinence from smoking as a primary means of preventing disease,[74] many patients do not receive such advice until serious health problems exist. Results from a national survey of internists, for example, indicate that while 82 percent of the internists report that they counsel more than 75 percent of smokers with heart disease, only 52 percent of the internists counsel more than 75 percent of all their patients who smoke.[83] These providers appear to be oriented more toward tertiary rather than primary prevention.

Several reports suggest doctors may lack the preparation to adequately facilitate patient cessation.[26,31,82,84] The National Cancer Institute has developed a program to educate medical and dental clinicians about tobacco-use intervention. Such a program can be applied to all health care situations. A wide variety of materials are available from the National Cancer Institute and other organizations for use by health care providers in counseling patients to quit.[19] Training on cessation should be available in all health care undergraduate, graduate, and continuing education programs.[56,70]

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the tobacco objectives over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the tobacco objectives.

- Provide sufficient, appropriate curricular content in tobacco use prevention and cessation in all schools and programs preparing students for careers in the health professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on tobacco use prevention and cessation by national professional associations whose members have roles in promoting avoidance of tobacco.

Surveillance and Data Needs

Availability of Future Data

Data from existing surveys conducted every 1 to 3 years are available to track objectives 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, and 3.9.

Periodic surveys and/or supplements to existing surveys can help to track objectives 3.10, 3.11, 3.12, 3.13, 3.14, and 3.15.

New surveillance systems are needed to track objective 3.16.

High Priority Needs

Standardized, systematic surveillance of tobacco use and its disease impact among adults and adolescents is needed for all States and at the national level. This system should provide for periodic data collection with sufficient frequency and with adequate statistical power to permit analyses of tobacco use behavior among subgroups of the population and to permit evaluation of the outcome of targeted interventions. Core questions should be used in both national and State-based surveys to assure comparability. Minority groups including blacks, Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives should be specifically surveyed for tobacco use.

Youth surveillance

To evaluate tobacco use prevention interventions targeted at youth at the State and national levels:

- Detailed national surveys and basic population-based State surveys of adolescent tobacco use should be conducted at least every 4 years.
- Sample sizes should be sufficient to evaluate these interventions by State, gender, race, and socioeconomic status.
- Attempts should be made to include school dropouts using special studies.
- Surveillance should always include information about smokeless tobacco use.

Adult surveillance

- National data on tobacco use by adults should be collected at least every 2 years so national trends in tobacco use may be analyzed and subgroups of the population might be identified for improved public health interventions.
- Comprehensive national surveys of beliefs, attitudes, and behaviors related to tobacco use should be performed at least every 4 years to identify predictors of quitting and evaluate antismoking interventions.
- Medical care utilization should be linked to information about tobacco use in these surveys, thus permitting analyses of smoking-attributable morbidity. Cal-

culations of smoking-attributable deaths and morbidity should be conducted at least every 4 years.

- Longitudinal surveys of 2 or more years duration with nationally representative samples should be performed periodically to assess population-based patterns of quitting.
- Maternal smoking data and data on smoking among women of reproductive age should be collected on a regular basis through ongoing surveillance systems.
- Population-based State surveys should include all States, and information about tobacco use, including smokeless tobacco, should be collected with each survey. State-specific data on adult tobacco use are useful in developing policy; conducting individual State-based analyses such as calculations of State-specific, tobacco-related disease impact; and in evaluating State-based interventions against tobacco use.

Research Needs

Research on the initiation of tobacco use

- Develop/refine risk-based classifications for children and adolescents that describe the full continuum of initiation risk (e.g., pre-contemplators, contemplators, experimenters, regular users).
- Identify the determinants of experimentation and initiation (i.e., the determinants of progression along the risk continuum described above).
- Evaluate the effectiveness of combined interventions (e.g., school-based programs and mass media) on smoking initiation, and determine which intervention elements are effective in delaying onset, maintaining delayed onset, and preventing initiation.

Research on regular smokers trying to quit

- Identify quit attempt determinants.
- Identify barriers to making a quit attempt (e.g., lifetime quitting history, perceived self-efficacy).
- Evaluate the effectiveness of different interventions (particularly advice from primary care providers, mass media campaigns, and telephone counseling) in motivating smokers to make a quit attempt.

Research on preventing relapse

- Assess the magnitude of the relapse problem.
- Develop classifications for recent quitters and former smokers based on length of time abstinent that describe and predict relapse risk.
- Identify the determinants of relapse for former smokers at all levels of relapse risk.
- Develop and evaluate innovative programs to prevent relapse by former smokers at all levels of relapse risk.
- Establish valid criteria for when to label a former smoker a "confirmed ex-smoker."

Research on tobacco policies

Evaluate the effectiveness of public policies in reducing the initiation of tobacco use and/or increasing tobacco use cessation. In particular, evaluate:

- Policies that affect children's access to tobacco products.
- Policies that affect children's exposure to advertising and promotion of tobacco products.
- Policies that restrict smoking in the workplace.

Related Objectives From Other Priority Areas

Alcohol and Other Drugs
4.5 Average age of first use

Educational and Community-Based Programs
8.4 Quality school health education
8.6 Worksite health promotion activities
8.8 Health promotion programs for older adults
8.10 Community health promotion programs

Unintentional Injuries
9.6 Residential fire deaths

Occupational Safety and Health
10.12 Worksite health and safety programs

Environmental Health
11.6 Radon testing
11.12 Construction standards to minimize radon concentrations

Oral Health
13.7 Oral cancer

Maternal and Infant Health
14.1 Infant mortality
14.5 Low birth weight
14.10 Alcohol, tobacco, and drug use during pregnancy
14.11 Prenatal care
14.12 Age-appropriate preconception counseling by clinicians

Heart Disease and Stroke
15.2 Stroke

Cancer
16.1 Cancer deaths
16.10 Tobacco, diet, and cancer screening counseling by clinicians

Diabetes and Chronic Disabling Conditions
17.1 Years of healthy life
17.2 Disability due to chronic conditions

Clinical Preventive Services
21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems
22.4 Gaps in health data

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Alcohol and Other Drugs

4

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4. Alcohol and Other Drugs

Introduction

In the decade since the formulation of the 1990 national health objectives, progress has been made in the effort to combat alcohol and other drug problems. The use of alcohol and illegal drugs has declined, at least in some populations.[31] Nonetheless, the toll exacted on society, health, and the economy by alcohol and other drugs remains staggering. In the Nation's inner cities, the drug problem appears to be worsening, with a concomitant increase in violent crime. For example, in 1989 the number of murders in the Nation's Capital averaged more than one a day, and more than 70 percent were drug related.

In the most recent comprehensive economic analysis, conducted in 1983, the costs of alcohol problems in America were estimated to exceed $70 billion per year, with the majority of these costs attributed to reduced productivity. An additional $44 billion in economic costs were attributed to drug problems.[16,39] Alcohol is implicated in nearly half of all deaths caused by motor vehicle crashes and fatal intentional injuries such as suicides and homicides; and victims are intoxicated in approximately one-third of all homicides, drownings, and boating deaths.[35]

Adolescents who use alcohol and other drugs are much more likely than their nonusing peers to experience other serious problems.[6] An estimated one in four adolescents are at very high risk of alcohol and other drug problems, school failure, early unwanted pregnancy, and/or delinquency. In the National Institute on Drug Abuse (NIDA) 1988 National Household Survey, 21.1 million Americans were estimated to have used marijuana in the past year, and 65.7 million had tried marijuana at least once.[31] Although cocaine use declined slightly in 1988, an estimated 21.2 million Americans had tried this addictive drug at least once. Use of crack cocaine, which appears to be even more addictive than the powdered form, has become increasingly widespread, especially in some urban centers. Among those aged 12 through 17 who had used cocaine in the past year, over twice as many reported smoking it as did their older peers.[32] This statistic is alarming given the greater potential for addiction when cocaine is smoked. Among its serious consequences is the incidence of developmental disabilities among infants of crack-addicted mothers.[21]

Abuse of alcohol and other drugs significantly increases the risk of transmitting the human immunodeficiency virus (HIV), directly through the sharing of contaminated needles, sexual contact with intravenous drug abusers or other drug injectors, or *in utero* infection and indirectly through adverse effects on immune system functioning and the increased risk of unsafe sexual practices. Alcohol is the principal contributor to cirrhosis, which is the ninth leading cause of death in the United States. [38] Alcohol use during pregnancy is the leading preventable cause of birth defects. Other drug abuse syndromes clinically similar to alcohol-related birth defects have been identified. For example, the use of cocaine during pregnancy poses serious threats to the fetus, including the risk of *in utero* brain hemorrhage and stroke.[12] Homeless alcohol abusers are at substantially increased risk of trauma, victimization, hypothermia, frostbite, and tuberculosis infection.[29] Alcohol and other drug abuse may be both a cause and an effect of homelessness.

Recognition and acknowledgment of the gravity of alcohol and other drug problems in the United States is changing the social climate. Almost every national opinion poll places alcohol and other drug problems as a priority concern, and the national effort to prevent these problems has mobilized government, schools, communities, businesses, and families. There is growing intolerance of the use of illicit drugs and the misuse of alcohol. A direct connection can be drawn between recent declines in marijuana and cocaine use by high school seniors and their perception of risk of harm and of social disapproval related to their use.[2] Behavior is strongly influenced by social norms, and norms are shaped, in part, by public attitudes and values. They, in turn, affect not only behavior but also legislative and regulatory actions to restrict access to harmful substances and to intensify enforcement of existing laws. Therefore, progress will depend greatly upon maintaining and increasing levels of public education and awareness.

The combination of increased public resolve, advanced scientific understanding, and the progress that has already been made in this area has led some Americans to envision a year 2000 with considerable improvements with respect to alcohol and drug use. Realization of this vision will depend on maintaining high levels of public awareness of these areas and increasing public awareness of the risk factors for HIV infection and the dangers of maternal alcohol and other drug use to unborn babies; the balance between public health messages and commercial promotions of alcohol, tobacco, and other legal drugs; recognition of the deleterious effects of alcohol and other drugs on job performance and the American work force; and treatment availability for people who recognize their dependence on drugs or alcohol and wish to seek help.

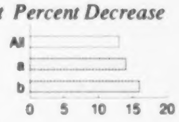
Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

4.1 Reduce deaths caused by alcohol-related motor vehicle crashes to no more than 8.5 per 100,000 people. (Age-adjusted baseline: 9.8 per 100,000 in 1987)

Special Population Targets

	Alcohol-Related Motor Vehicle Crash Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
4.1a	**American Indian/Alaska Native men**	**52.2**	**44.8**
4.1b	**People aged 15-24**	**21.5**	**18**



Baseline data source: Fatal Accident Reporting System, U.S. Department of Transportation.

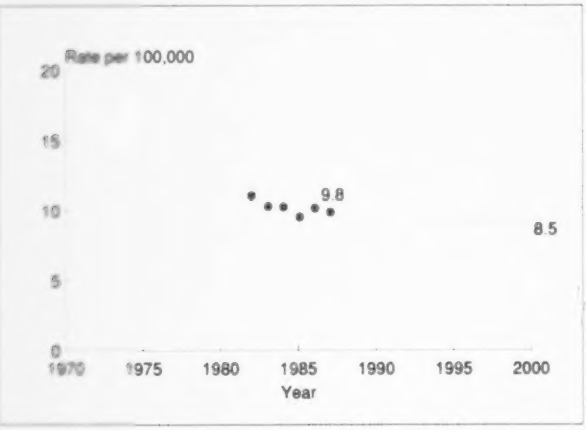


Fig. 4.1

Age-adjusted alcohol-related motor vehicle crash death rate

This objective is stated in terms of fatalities because of the availability of reliable and precise data regarding deaths caused by motor vehicle crashes. Injuries are also a serious problem. Although decreases in deaths may indicate parallel reductions in injuries, improvements in occupant protection and emergency medical services may prevent deaths while the incidence of crash-related injuries is actually increasing. In general, there is a need to improve surveillance of injuries caused by motor vehicle crashes, including those involving alcohol.

In 1987, motor vehicle crashes were the fifth leading cause of death in the United States, and approximately half of these were alcohol-related.[38] Many more people were seriously injured and permanently disabled. Alcohol-related traffic crashes are the leading cause of death and spinal cord injury for young Americans.

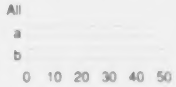
The alcohol-related proportion of crash deaths dropped by 10 to 15 percent between 1982 and 1986 because of the emergence of highly visible citizen activist groups, the media attention that such groups generated, and resulting increases in deterrence activities involving legislation, increased enforcement of alcohol-impaired driving laws (including roadside sobriety checkpoints), and more frequent use of sanctions such as license suspensions and revocations. For instance, State laws that uniformly establish age 21 as the minimum alcohol purchase age were associated with an overall reduction of nearly 13 percent in the fatal accident involvement rate for youth under 21.[27] In 1988, the Surgeon General of the U.S. Public Health Service explicitly recognized the contribution of alcohol advertising to the problem of drinking and driving and called for increased regulation of alcohol advertising.[37]

The levels of citizen activism, enforcement, and sanctioning activity have declined to some extent in recent years. As a result, progress in further reducing alcohol-related crashes has slowed since 1985.[27] These shifts in alcohol-related crash deaths show how united citizen, private business, and government concern and action can bring attention to a problem and develop strategies to address it.

Much more remains to be done. Other needed measures include increased media attention to alcohol-impaired driving laws and their enforcement, enforcement of alcohol beverage control laws regarding access to alcohol by minors, and increased testing of drivers involved in fatal and serious injury cases.

4.2 Reduce cirrhosis deaths to no more than 6 per 100,000 people. (Age-adjusted baseline: 9.1 per 100,000 in 1987)

Special Population Targets

	Cirrhosis Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
4.2a	**Black men**	**22**	**12**	
4.2b	**American Indians/Alaska Natives**	**25.9**	**13**	

Baseline data sources: National Vital Statistics System, CDC; Indian Health Service Administrative Statistics, IHS.

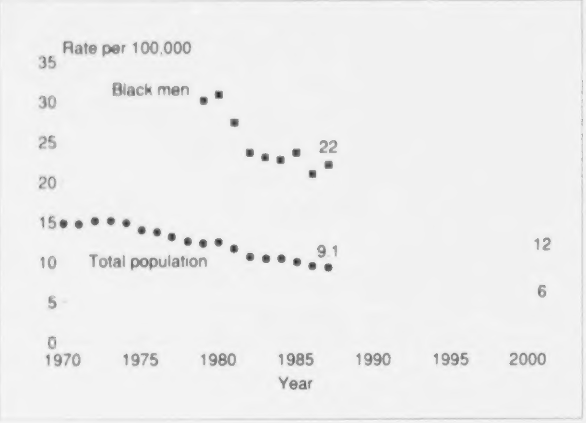


Fig. 4.2

Age-adjusted cirrhosis death rate

Cirrhosis of the liver, which is largely attributable to heavy alcohol consumption, was the ninth leading cause of death in the United States in 1985. Following Prohibition Era declines, cirrhosis death rates increased until 1973 when they again began to decline steadily. Many experts estimate that alcohol abuse is associated with a very large portion of cirrhosis deaths, and cirrhosis mortality is used as an indicator of abusive alcohol consumption patterns. To reduce cirrhosis deaths, efforts to reduce heavy drinking patterns should be intensified. Research into underlying mechanisms, preventive strategies, and treatment interventions must be refined, with special attention paid to high-risk subpopulations.

Over the past two decades, death rates from cirrhosis among black and Native American men have decreased more rapidly than those for white men. However, current death rates for nonwhites (almost 20 deaths per 100,000 population) remain almost 70-percent higher than rates for whites;[29] the rates for American Indian men are triple those of white men.[38] These disparities may represent differential access to health care services, differential drinking patterns, or some combination of both. Intensified research into predisposing and precipitating factors related to the development of cirrhosis as well as additional prevention and intervention efforts are necessary to achieve the special population targets.

4.3 Reduce drug-related deaths to no more than 3 per 100,000 people. (Age-adjusted baseline: 3.8 per 100,000 in 1987)

Baseline data source: National Vital Statistics System, CDC.

4.4 Reduce drug abuse-related hospital emergency department visits by at least 20 percent. (Baseline data available in 1991)

Drug-related deaths serve as an important indicator of the adverse consequences of drug use. Causes of death categorized as drug related for reporting purposes include drug psychoses; drug dependence; nondependent use of drugs, not including alcohol and tobacco; accidental poisoning by drugs, medicaments, and biologicals; suicide by drugs, medicaments, and biologicals; assault from poisoning by drugs and medicaments; and poisoning by drugs, medicaments, and biologicals when it is undetermined whether they were inflicted accidentally or purposefully. A substantial proportion of these deaths are the result of poisoning from illicit use of drugs.[5]

Other acute health effects of drug use lead to emergency medical attention. In fact, emergency departments are a major source of data regarding adverse consequences from drug abuse. The Drug Abuse Warning Network (DAWN) is a surveillance system designed to monitor drug-related hospital emergency department visits and medical examiners' cases in 21 metropolitan areas, as well as emergency visits in a smaller sample of hospitals outside of metropolitan areas. In the hospital emergency department system, a drug abuse case is defined as a visit resulting from the nonmedical use of a drug. Nonmedical drug use includes the use of prescription drugs in a manner inconsistent with accepted medical practice, the use of over-the-counter drugs contrary to approved labeling, and the use of illicit drugs.

The number of drug abuse-related emergency visits reported annually by DAWN hospitals from 1985 through 1989 indicated an increasing trend in their volume through 1988 and a slight decline between 1988 and 1989. It is likely that these numbers will remain substantial for some years, reflecting consequences from current intense use and past chronic use.

In 1989, 39 percent of the DAWN emergency visits were related to cocaine use and 31 percent were related to the use of alcohol in combination with other drugs. It is important to note that 1986 was the first year that cocaine-related emergency room visits exceeded those associated with alcohol-drug combinations.[33]

Prevention efforts that affect the prevalence, initiation, and intensity of drug abuse should be reflected in reduced rates of emergency department visits over time. Prevention programs aimed at reducing cocaine use and use of alcohol in combination with other drugs would have a significant impact on meeting this objective. A reduction of 20 percent in drug abuse-related emergency visits and drug-related deaths is also feasible, but only if drug abuse treatment capacity is expanded significantly. Until those changes take effect, the adverse consequences of drug abuse are likely to increase.

In 1991, enhanced data collection carried out by DAWN will include a probability sample of hospitals. It will then be possible to calculate rates of drug-related emergency room visits for the U.S. population as a whole and by sociodemographic characteristics. With these data, it will be possible to formulate objectives for specific population groups which are at high risk for adverse consequences resulting from drug abuse.

Risk Reduction Objectives

4.5 Increase by at least 1 year the average age of first use of cigarettes, alcohol, and marijuana by adolescents aged 12 through 17. (Baseline: Age 11.6 for cigarettes, age 13.1 for alcohol, and age 13.4 for marijuana in 1988)

Baseline data source: National Household Survey of Drug Abuse, ADAMHA.

Drug use among young people appears to develop in predictable stages, consistent with the "gateway" concept.[22] This concept suggests that experimentation with drugs usually begins with cigarettes, alcohol, or marijuana, and then progresses to other drugs. Young people engage in relatively little experimentation with most illicit drugs before the final 3 years of high school. Less than 11 percent of the class of 1986 had tried any illicit drug except marijuana before they entered the 10th grade. However, 50 percent of the high school seniors who had ever used marijuana already had used it before entering high school, while an even greater percentage of pre-high school students had already used alcohol.[30]

This objective is particularly important because the use of drugs at preteen ages, especially use of these gateway drugs, appears to predict both greater involvement with alcohol and with other drugs and less likelihood of recovery. The use of cigarettes, alcohol, and marijuana is correlated with other health problems including adolescent suicide, homicide, school dropout, motor vehicle crashes, delinquency, early sexual activity, sexually transmitted diseases, and problem pregnancy.[20] People who begin smoking in childhood are more inclined toward heavy smoking or drinking at an earlier age than those who start later. They also are more likely to abuse other drugs. Young adults are unlikely to develop alcohol and drug problems if age of first use is delayed beyond childhood and adolescence.[40]

Marijuana use exemplifies the age-at-first-use phenomenon. Use of marijuana prior to age 15 has been associated with both heavier use after 15 and the use of other drugs.[19,40]

4.6 Reduce the proportion of young people who have used alcohol, marijuana, and cocaine in the past month, as follows:

Substance/Age	*1988 Baseline*	*2000 Target*
Alcohol/aged 12-17	**25.2%**	**12.6%**
Alcohol/aged 18-20	**57.9%**	**29%**
Marijuana/aged 12-17	**6.4%**	**3.2%**
Marijuana/aged 18-25	**15.5%**	**7.8%**
Cocaine/aged 12-17	**1.1%**	**0.6%**
Cocaine/aged 18-25	**4.5%**	**2.3%**

Note: The targets of this objective are consistent with the goals established by the Office of National Drug Control Policy, Executive Office of the President.

Baseline data source: National Household Survey of Drug Abuse, ADAMHA.

Mind-altering and addictive substances have been shown to jeopardize physical, mental, and social development during the formative years and to endanger the successful transition from school to the workplace. Moreover, use of these substances, including alcohol, is illegal for young people and thus may have long-term implications for such things as employment and schooling.[24]

Of particular concern is drug use among school dropouts, lower income, inner-city youth whose rates of use do not appear to have declined as much as rates among general population youth. Also of particular concern is the increasing rate of use among pregnant teenagers whose pregnancies must be considered at high risk even without drug involvement.[7,23]

4.7 Reduce the proportion of high school seniors and college students engaging in recent occasions of heavy drinking of alcoholic beverages to no more than 28 percent of high school seniors and 32 percent of college students. (Baseline: 33 percent of high school seniors and 41.7 percent of college students in 1989)

Note: Recent heavy drinking is defined as having 5 or more drinks on 1 occasion in the previous 2-week period as monitored by self-reports.

Baseline data source: Monitoring the Future (High School Senior Survey), ADAMHA.

Heavy drinking among youth has been conclusively linked to such problems as motor vehicle crashes and deaths, physical fights, destroyed property, academic troubles, job troubles, and troubles with law enforcement authorities.[30] In recent years, binge drinking among high school seniors has only declined in modest increments. About one-third of high school seniors reported having 5 or more drinks in a row on at least one occasion in the past 2 weeks.[30]

The declining pattern of alcohol use among high school seniors is an indication of the feasibility of a 25-percent reduction target for the young adult population. The development of school-based and community-based prevention programs and the increase in awareness through media and other communication channels may account for the gradual decline. The possibility of serious medical and economic consequences for individuals, families, and society make prevention and early intervention essential.

4.8 Reduce alcohol consumption by people aged 14 and older to an annual average of no more than 2 gallons of ethanol per person. (Baseline: 2.54 gallons of ethanol in 1987)

Baseline data source: National Institute on Alcohol Abuse and Alcoholism, ADAMHA.

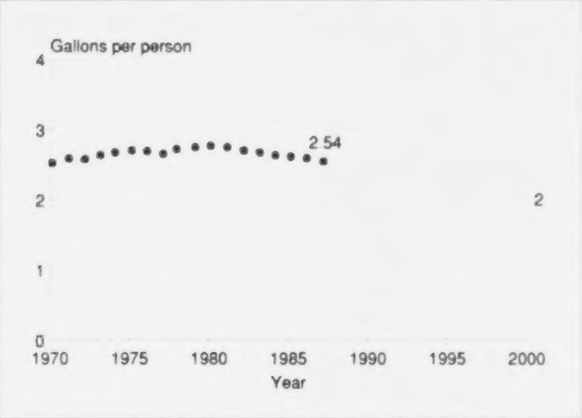


Fig. 4.8

Average consumption of ethanol per person per year

While any drinking by people under 21 years of age is illegal and undesirable, existing statistics provide estimates of per capita consumption for the population over age 14. These estimates are based on population figures as they relate to information on beverage sales, tax receipt data, or both, which come primarily from States, with some data from beverage industry sources.

The overall downward trend, after a peak in 1981 at 2.76 gallons per person over age 14, masks substantial differences in consumption trends for types of alcoholic beverages. For example, wine has shown an increase in the past 10 years with no evidence of any decline, partly due to soaring wine cooler sales since their introduction in 1983. Beer consumption increased from 1977 to 1981 but declined slightly in following years. Spirits consumption declined 20.5 percent between 1978, the peak year, and 1986.[4] The decreasing trend in alcohol consumption can be attributed to a variety of factors, including changing lifestyles and heightened awareness of the health and safety risks of alcohol consumption.

Consumption of alcohol can be influenced by laws and regulations, particularly those that have an impact on alcoholic beverage prices and minimum drinking age laws. Studies on the effects of the price of alcohol on consumption and alcohol-related problems among people aged 16 to 21 concluded that "higher real prices for beer, the most popular alcoholic beverage among youth, would reduce not only the number of young people who drink but also the incidence of heavy drinking and of frequent drinking.[28] The price of alcoholic beverages can most effectively be increased by increased taxation. Studies on the effects of minimum legal drinking ages on alcohol consumption by young people aged 16 to 21 reported that "frequency of consumption of beer is inversely related to the minimum legal age for its purchase."[28]

Now that the legal drinking age has been raised to 21 in all States, progress on the objective can be achieved through stricter enforcement of the minimum age laws. For example, tracking procedures can be implemented that maintain a statistical record of establishments reported to have made illegal sales of alcoholic beverages to youths.

Alcohol advertising can also influence youths as well as adults in their decisions about drinking. Sponsorships and promotions on college campuses by alcohol producers and the use of celebrities and youth- oriented musical groups in advertising create a prodrinking environment.[37]

4.9 Increase the proportion of high school seniors who perceive social disapproval associated with the heavy use of alcohol, occasional use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	**56.4%**	**70%**
Occasional use of marijuana	**71.1%**	**85%**
Trying cocaine once or twice	**88.9%**	**95%**

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

Baseline data source: Monitoring the Future Study (High School Senior Survey), ADAMHA.

4.10 Increase the proportion of high school seniors who associate risk of physical or psychological harm with the heavy use of alcohol, regular use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	**44%**	**70%**
Regular use of marijuana	**77.5%**	**90%**
Trying cocaine once or twice	**54.9%**	**80%**

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

Baseline data source: Monitoring the Future Study (High School Senior Survey), ADAMHA.

Recently, investigators reported that the 10-year decline (from 1978 to 1987) in marijuana use by high school seniors can be directly attributed to the dramatic increase in the perceived risk of psychological and physical harm and the increased perception of social disapproval associated with regular use of marijuana.[2] A similar relationship seemed to occur between increased perceived risk of use and decreased reported use of cocaine from 1986 to 1987. In a comparable fashion, these two prevention factors, if emphasized at the national level, may also be instrumental in the future prevention of tobacco and alcohol use, particularly by adolescents.

Although lifestyle factors such as truancy, religious values, or political beliefs are linked to individual differences in the use of marijuana, these factors do not explain the general downward trend in marijuana use since 1978. Rather, "if perceived risks and disapproval associated with regular marijuana use had not risen substantially in recent years, the decline in actual use would not have occurred."[2]

It is important to note that current users uniformly deny the risks of using marijuana. Thus, whereas the trend in increased perceptions of risk is encouraging, additional efforts must be made to alter the behavior of users.

4.11 Reduce to no more than 3 percent the proportion of male high school seniors who use anabolic steroids. (Baseline: 4.7 percent in 1989)

Baseline data source: Monitoring the Future Study (High School Senior Survey), ADAMHA.

Anabolic steroids have legitimate therapeutic uses and therefore can be prescribed appropriately. Their inappropriate use as a part of regimens for body-building and strength-enhancing pose new problems, especially among young men engaged in athletic pursuits. To date, they appear not to have become a part of the illicit drug culture and are not procured principally through illegal channels. Control of the risks they pose as a result of inappropriate use is a matter of proper regulation, as well as professional and consumer awareness, to ensure drug safety.

It is estimated that there are over one million current or previous users of anabolic-androgenic steroids in the United States, with approximately one-half this group comprised of adolescents. The role of anabolic steroid use in the etiology of various diseases is unclear, but studies have associated it with changes in the physiology of organs and body systems with potential for subsequent health problems. The best documented effects include those on the liver, serum lipids, and the reproductive system. Other suspected areas of concern include cerebrovascular accidents and prostatic changes. A recent population-based study demonstrated that a significant proportion of adolescent users report behaviors, perceptions, and opinions which are consistent with psychological dependence on this drug.[34]

Services and Protection Objectives

4.12 Establish and monitor in 50 States comprehensive plans to ensure access to alcohol and drug treatment programs for traditionally underserved people. (Baseline data available in 1991)

While many alcohol and other drug abuse treatment programs exist, access to these programs is limited by structural, economic, linguistic, and cultural barriers. These barriers preclude provision of adequate services and thus limit the potential for controlling and reducing alcohol and drug abuse in the Nation. The following populations have the most trouble getting appropriate treatment:

- People with low incomes. Coverage for alcohol and drug abuse services under private and public financing programs is consistently less in amount and scope of benefits than coverage for general health care services. Thus, treatment is greatly dependent upon the individuals' or families' ability to pay. For the uninsured working population and the Nation's homeless population, financing of treatment poses an intractable barrier.

- Women. Women have limited access to drug and alcohol services because of their unique needs, especially pregnant women and mothers with young children. Because of the specific risks to the fetus of alcohol and drug use during pregnancy, programs are needed that specifically address the needs of pregnant women.
- Youth. Adolescent drug and alcohol users have unique needs and problems that cannot be adequately addressed in programs designed for adults. Treatment models specifically designed to serve the needs of youthful users have only recently begun to be developed but can be expected to expand during the 1990s. Special attention to the treatment needs of homeless, runaway, and school-dropout youth is needed.
- Minorities. Nonwhite and non-English-speaking minority populations require treatment programs that take into account specific cultural influences on alcohol and other drug use and that impose no language barriers. Concerted attention should be given to the development of multilingual, multicultural treatment programs.
- Inmates in correctional facilities. A large proportion of incarcerated offenders have varying degrees of alcohol and drug abuse problems. The majority of treatment programs available in prisons, however, are underfunded and understaffed. When offenders are released, the probability is great that their untreated alcohol and drug problems will reemerge along with criminal behavior.

Data are scarce for determining the number of people in these populations who are not currently being treated because of a lack of appropriate, accessible services. New data systems to measure the prevalence of alcohol and drug problems may help to improve this situation, though these systems will need to be designed specifically to capture information about the needs of these special populations who are at highest risk. The State Substance Abuse Services Plans, analyzed by the Office for Treatment Improvement of the Alcohol, Drug Abuse, and Mental Health Administration will be analyzed to establish a baseline and track this objective.

4.13 Provide to children in all school districts and private schools primary and secondary school educational programs on alcohol and other drugs, preferably as part of quality school health education. (Baseline: 63 percent provided some instruction, 39 percent provided counseling, and 23 percent referred students for clinical assessments in 1987)

Baseline data source: *Report to Congress and the White House on the Nature and Effectiveness of Federal, State, and Local Drug Prevention/Education Programs*, U.S. Department of Education, 1987.

Legislation passed by Congress and signed by the President declares alcohol and other drug education and prevention to be essential components of a comprehensive strategy to reduce demand for and use of drugs in the United States. This commitment to prevention and education is underscored by funding provided for these programs; a total of $355 million was appropriated by Congress in fiscal year 1989 for prevention programs supported by the Department of Education alone.

A quality school health education program should provide factual information about the harmful effects of drugs, support and strengthen students' resistance to using drugs, carry out collaborative drug-abuse prevention efforts with parents and other community members, and be supported by strong school policies as well as services for confidential identification, assessment, referral to treatment, and support groups (often provided through a student assistance program) for drug users. For a definition of quality school health education, see *Educational and Community-Based Programs*.

Traditionally, alcohol and other drug education programs have focused on junior and senior high school students. However, as indicated by statistics for the average age of first use of the gateway drugs, prevention must also be directed to elementary school students. It is particularly crucial to prevent or at least delay the use of alcohol and other drugs by children and teenagers because rapid growth can amplify the physiological and psychological effects.

State boards of education, governing boards of State university systems, and State legislatures can play a crucial role by mandating school drug and alcohol policies and alcohol and other drug education and prevention programs. About three-quarters of the States have already taken action to require such education. States can also set minimum curriculum standards for drug and alcohol education and require teaching certification in the subject. States can disseminate data on effective prevention practices and assist local educational agencies and communities in surveying drug use and evaluating prevention programs.

4.14 Extend adoption of alcohol and drug policies for the work environment to at least 60 percent of worksites with 50 or more employees. (Baseline data available in 1991)

Alcohol and other drugs are used by individuals in all occupations and professions, from corporations to small businesses, from boardroom to toolroom. Alcohol and other drug use interferes with employees' efficient and safe performance of work responsibilities and the exercise of good judgment. Public and private sector adoption of workplace policies and procedures that establish use of alcohol and other drugs in the workplace as unacceptable and offer help through a confidential employee assistance program (EAP) to any violator of that policy will result in enhanced employee health, safety, and productivity, and the fostering of public confidence and trust. Assurances should be included that the EAP procedures will not be used to identify substance abusers for disciplinary action without treatment.

Three programmatic components are required to meet this objective:

- A prevention and intervention program targeted to all employees to prohibit onsite use of alcohol and other drugs and to aggressively discourage excessive use of alcohol and other drugs offsite
- Readily available EAP services for employees not performing at acceptable levels for reasons related to alcohol or drug problems
- Assured confidentiality protection that meets Federal standards for those whose work-related performance deficits require intervention.

Established policies and procedures to assure efficient and safe performance of work responsibilities require careful, regular, and detailed promulgation through the use of meetings, announcements, posters, and bulletins. Both the proscriptions against onsite and offsite deleterious use of alcohol and other drugs and the ready availability of protective and corrective resources for employees involved with such substances should be the subject of these announcements. Policies and procedures to assure efficient and safe performance of work responsibilities further require the employers' commitment to provide counseling and to make available treatment services through agencies that assure full confidentiality protection to the employee.

An important complement to worksite EAP services is availability of alcohol and drug education programs sponsored by hospitals and health maintenance organizations.

The Office of Disease Prevention and Health Promotion will initiate a survey of worksite activities to establish baseline data and track this objective in 1991.

4.15 Extend to 50 States administrative driver's license suspension/revocation laws or programs of equal effectiveness for people determined to have been driving under the influence of intoxicants. (Baseline: 28 States and the District of Columbia in 1990)

Baseline data source: National Highway Traffic Safety Administration, U.S. Department of Transportation.

The suspension or revocation of the driver's license of a person found to be driving while under the influence (DWI) of alcohol has proven to be a most successful deterrent. However, many offenders either avoid license suspension or are able to delay it so long that this approach becomes meaningless.

There are numerous reasons for this. Most State laws base the licensing action on a person's conviction for DWI. Unfortunately, convictions are not always fast and sure in cases involving alcohol-impaired driving. The court may have a backlog of cases, or a defendant who is intent on delaying the verdict can implement a wide range of delaying tactics. A conviction for DWI can often be avoided altogether by plea bargaining. Also, pretrial or preconviction diversion programs operate in some courts.

Administrative suspension and revocation laws and implied consent laws are interrelated parts of State programs to deter the incidence of DWI. Both provide for administrative action, separate and apart from the judicial process that follows when a person is arrested for DWI or a similar offense. Implied consent covers situations in which a driver refuses to submit to a chemical test.

Effective administrative suspension and revocation laws require an immediate suspension of license for at least 30 days before even a limited driving privilege can be reinstated. The licensing action should not be stayed pending a hearing if one is requested by the offender. In addition, the program should be self-sufficient; that is, offender fines should cover any costs.

Other innovations have been recommended to reduce the incidence of alcohol-impaired driving. Among them are ignition interlock systems, house arrest and curfew for first offenders, and the lowering of legal blood alcohol content from its current level of 0.10 percent, as discussed in Objective 4.18.

4.16 Increase to 50 the number of States that have enacted and enforce policies, beyond those in existence in 1989, to reduce access to alcoholic beverages by minors.

Note: Policies to reduce access to alcoholic beverages by minors may include those that address restriction of the sale of alcoholic beverages at recreational and entertainment events at which youth make up a majority of participants/consumers, product pricing, penalties and license-revocation for sale of alcoholic beverages to minors, and other approaches designed to discourage and restrict purchase of alcoholic beverages by minors.

Although changes in laws regulating minimum drinking age in all States have had some effect on consumption of alcoholic beverages by adolescents and young adults, they have not eliminated access to alcohol nor deterred many adolescents from drinking.[13] Other interventions are needed as well to restrict access to and discourage use of alcoholic beverages by young people under age 21. Localities and States can enact restrictions on sale of alcoholic beverages at entertainment recreational events where teenagers compose the majority of participants and observers.

An understanding of characteristics of environments that promote or reduce alcohol consumption and alcohol use problems is relevant to the development of effective prevention policies and programs. For adolescents, clearly some influences are beyond direct control of State policies, such as family attitudes toward drinking, peer value systems, and individual risk characteristics. However, policies can be designed to shape environmental factors that either facilitate or help to control use of alcoholic beverages by teenagers.

Many young people are able to make their own direct purchases, despite laws and ordinances making sale to minors illegal. More effective enforcement procedures, with effective sanctions imposed on those establishments that fail to obey these laws, can be imposed to curtail access. Policies that hold parents responsible for their children's possession and use of alcoholic beverages can also become the basis for local programs to reduce the prevalence of drinking behavior among youth.

Among the other policy-related changes that States can consider are regulations of the types of establishments that may sell alcoholic beverages. Such means as use of zoning ordinances, restriction of hours of sale, and determinations of whether alcoholic beverages may be sold for on-site or off-site consumption can be used to address the patterns of adolescent purchasing and drinking behaviors. In addition, changes in price—including Federal, State and local taxes—may affect both alcohol consumption patterns and alcohol-involved automobile crashes. Evidence about the association between price and alcohol consumption comes from the results of natural experiments (e.g., comparisons of alcohol consumption in States with differing taxes on alcohol), as well as from econometric research, which uses available data to make projections about the possible impact of price changes on consumption and alcohol use problems through statistical modeling.

Econometric studies examined the effects of price on alcohol consumption and alcohol-involved automobile crashes. These studies used the existing prices of alcoholic beverages in the young people's places of residence as a base and derived estimates from available data on alcohol use among youth aged 16 to 21 in the United States between 1975 and 1981.[8,15] Controlling for other variables that may be related to alcohol use and fatal motor vehicle crashes, such as age, sex, and family income, these studies have projected that higher real prices for beer would reduce the incidence of heavy drinking and frequent drinking among young people, as well as the number of young people who drink.[9,15]

Stable Federal excise taxes combined with only modest increases in State and local excise taxes have contributed to a decline in the real price of alcoholic beverages.[8] The Federal tax on alcohol in beer and wine has remained constant since 1951, and the tax on alcohol in distilled spirits was increased in 1985 after remaining unchanged for nearly 35 years.[8] Further, the Federal excise tax on alcohol in beer, the most popular beverage among youths who use alcohol, is less than one-third the tax on alcohol in distilled spirits.[8] Between 1960 and 1980, the real price of beer fell by 27 percent; the real price of wine, by 20 percent; and the real price of spirits, by 48 percent.[10] To serve as an effective deterrent over time, excise tax on alcohol products should be structured to increase or at least not to decrease in real terms. Indexing alcohol taxes would allow the price of alcohol to keep pace with inflation.

In terms of fatal automobile crashes, it is estimated that a 100-percent increase in the real beer tax (approximately $1.50 per 24-unit case of 12-ounce cans) would reduce highway mortality among 15- to 17-year-old drivers by about 18 percent; among 18- to 21-year-old drivers, by about 27 percent; and among 21- to 24-year-old drivers, by about 19 percent.[42] A tax amounting to approximately 35 percent of the retail price of beer is projected to halve the number of alcohol-related fatalities among 16- to 21-year-old drivers, a 50-percent tax would eliminate approximately 75 percent of these deaths.[36]

Higher prices for alcohol were also found to be related to lower rates of heavy drinking. Cirrhosis mortality, an indicator of 10 to 20 years of heavy drinking by individuals, is found to be lower in 30 States that raised distilled spirits taxes, compared to States that did not raise taxes.[10] It is projected that an increase of $1 in State distilled spirits tax rates from 1962 to 1977, would have reduced cirrhosis mortality by nearly 2 percent in a State, and that doubling the Federal distilled spirits tax would have reduced cirrhosis mortality by 20 percent in the Nation.

Taxes on alcohol are estimated to cover only about half the lifetime discounted costs that drinkers impose on others through collectively financed health insurance, pensions, disability, group life insurance, fines, motor vehicle accidents, and criminal justice costs.[26] Specifically, these "external costs" total $0.48 per ounce of alcohol consumed, approximately twice the current average (State plus Federal) excise and sales taxes on alcoholic beverages. These external costs are dominated by costs associated with alcohol-related traffic crashes.

Equalizing the taxes for wine and beer to those for spirits, adjusting the level for inflation since 1970, and adding the average current State alcohol tax level, would total 70 cents per ounce of ethanol, a level consistent with the recommendations of the Surgeon General's Workshop on Drunk Driving.[37]

4.17 Increase to at least 20 the number of States that have enacted statutes to restrict promotion of alcoholic beverages that is focused principally on young audiences. (Baseline data available in 1992)

Experts have directed specific attention to public policy approaches to reduce illicit use of alcohol by young people.[37] In addition to taxation measures to increase the price of alcohol, these include measures to restrict or control the serving of alcoholic beverages in settings where young people comprise the majority of possible consumers, and limitations on promotion focusing principally on young audiences. Establishing a baseline and tracking of this objective will be carried out by the Office of Alcohol and State Programs, National Highway Traffic Safety Administration, U.S. Department of Transportation.

Advertisements and promotion have been found to stimulate alcohol consumption of adults and adolescents to at least a modest degree.[1] Although advertising appears to have a more limited effect on excessive, hazardous, and problematic drinking, it may be a significant contributing factor in creating or reinforcing these adverse alcohol use patterns.

Although single young males are more likely to report frequent heavy drinking and drinking-related problems,[18] and drivers under the age of 21 have the highest rates of alcohol-involved fatal traffic crashes,[14] little research has examined alcohol advertisements targeted specifically at college students.[3] The average number of inches of national alcohol advertising per college newspaper issue was lower in 1984-85 than in 1977-78, but during both periods the amount of space devoted to alcohol advertising greatly exceeded advertising for books and soft drinks. In the 1977-78 period, 34.6 column inches per issue were devoted to alcohol advertising, compared to 1.4 for books and 1.2 for soft drinks.[11] During 1984-85, 23.8 inches were devoted to alcohol, 1.3 to books, and 0.5 to soft drinks.[3]

At the time of the 1984-85 study, not all States had raised their minimum drinking age for alcoholic beverages to 21. However, extensive alcohol advertising was found even at colleges in States where the minimum drinking age was 21. There were no significant differences in total column inches devoted to alcohol advertising between the States with a drinking age of 21 and those with a lower minimum.[3] Furthermore, in 1984-85, where space devoted to national alcohol advertising was compared with all national advertising, a greater proportion of national advertising was given to alcohol advertising in schools with lower male enrollments.

4.18 Extend to 50 States legal blood alcohol concentration tolerance levels of .04 percent for motor vehicle drivers aged 21 and older and .00 percent for those younger than age 21. (Baseline: 0 States in 1990)

Baseline data source: National Institute on Alcohol Abuse and Alcoholism, ADAMHA.

A blood alcohol concentration of 0.10 percent significantly affects the ability to drive by impairing vision, perception, judgment, reaction time, and the ability to brake and control speed. The Surgeon General's Workshop on Drunk Driving recommended changes in State laws relating to acceptable blood alcohol concentration tolerance levels in drivers.[37] Those States that have adopted lower legal levels for drivers under age 21 have already experienced decreases in fatalities among this age group.

4.19 Increase to at least 75 percent the proportion of primary care providers who screen for alcohol and other drug use problems and provide counseling and referral as needed. (Baseline data available in 1992)

Recommendations from a number of professional associations and the U.S. Preventive Services Task Force concur that primary health care providers have an important responsibility regarding counseling to prevent alcohol and other drug abuse problems, case finding, and referral to self-help resources and treatment services.[43] Particular concern is directed toward adolescent patients and pregnant women. Though baseline data are unavailable, several local studies of physician practice report that as many as about 34 percent of physicians provide counseling to those patients whom they believed to be drinking alcohol excessively.[41] Patient records confirm this counseling for about 18 percent.[17] This objective supports increasing the proportion who regularly provide such counseling related to alcohol as well as other drug use. The Office of Disease Prevention and Health Promotion will initiate a survey of primary care providers to establish baseline data and track this objective in 1992.

Personnel Needs

Priorities for ensuring sufficient trained personnel to achieve the Alcohol and Other Drug objectives include the following:

- Establish the number of health professionals who are needed for the service, educational, and research aspects of the objectives.
- Provide alcohol and drug use curriculum for all schools and programs preparing students for careers in the health professions, including allied health fields. Ensure that all graduates of such schools and programs can demonstrate appropriate knowledge of information and skills in diagnosis and counseling of alcohol and other drug abuse.

- Provide continuing education on alcohol and other drug abuse through national professional associations whose members have roles in the delivery of health, mental health, education, and related services.
- Increase the number of faculty development programs and fellowships in alcohol and other drug problems in accredited schools preparing students for careers in health professions.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track 4.1, 4.2, 4.3, 4.4, and 4.8.

Periodic surveys and/or supplements to existing surveys are available to track Objectives 4.5, 4.6, 4.7, 4.9, 4.10, and 4.11.

New surveillance systems are needed to track Objectives 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, and 4.19.

High Priority Needs

A comprehensive data capability is needed at national and appropriate subnational levels to monitor the extent and consequences of the use of alcohol and other drugs in the United States. Specifically, direct counts, surveys, or estimation techniques are required to yield rates and trends over time for each of the following kinds of indicators of use of alcohol and other drugs:

- The size, characteristics, and time trends of populations of special concern who are difficult to enumerate, such as intravenous drug abusers, alcohol abusers, users of heroin, users of cocaine or crack, nonmedical users of steroids, and persons in the general population who are impaired by abuse of alcohol or other drugs at any particular time.
- Characteristics of the public and private alcohol and other drug abuse treatment system and the numbers and characteristics of persons receiving treatment, with particular attention to treatment for pregnant addicted women.
- Efficacy rates of the different types of alcohol and other drug abuse treatment and prevention programs determined by appropriate outcome measures such as the proportion of persons exposed to the program who are free of alcohol and other drug problems after a specified followup period.

The following steps should also be taken:

- More thorough recording and tabulating of the consequences of alcohol and other drug use.
- Routine evaluation for alcohol and other drug problems of people who are admitted to short-stay hospitals.
- Toxicologic examination for detection of abused drugs, their metabolites, and alcohol routinely performed on all victims of injury-related death or serious trauma in every State. Also, determination of blood alcohol level for drivers involved in fatal motor vehicle crashes who are not themselves fatally injured.

Research Needs

If progress is to continue toward reducing disability and death related to alcohol and other drug use, the following areas must be addressed to achieve a sound research base:

- The interaction of biological, family (parental and other modeling), environmental, and psychological processes that are associated with the risk of, or resistance to, using alcohol and other drugs and the transition from use to abuse of drugs.
- The relationship between community/environmental factors and the support of or barriers to alcohol abuse and other drug-using behaviors.
- Etiology of the use of cocaine and cocaine derivatives as well as new drugs that are increasingly used, including steroids.
- Evaluation of interventions to understand more fully the extent to which new skills (e.g., coping skills, parental skills) produce resistance to alcohol abuse and drug use and maintenance of this resistance over time.
- Evaluation of the effectiveness of state-of-the-art model prevention intervention strategies.
- The physical, social, economic and psychological consequences of illicit drug use.

In addition, renewed commitment is needed to assure diffusion of the results of etiologic and intervention research to service practitioners and educators.

Related Objectives from Other Priority Areas

Tobacco

3.5 Smoking initiation by youth

Mental Health and Mental Disorders

6.1 Suicide
6.5 Adverse health effects from stress
6.6 Use of community support programs
6.7 Depression
6.9 Taking steps to control stress
6.10 Suicide prevention in jails
6.11 Worksite stress management programs

Violent and Abusive Behavior

7.1 Homicide
7.3 Weapon-related deaths
7.4 Child abuse and neglect
7.5 Partner abuse
7.6 Assault injuries
7.7 Rape and attempted rape
7.9 Physical fighting among youth
7.17 Comprehensive violence prevention programs

Educational and Community-Based Programs

8.1 Years of healthy life
8.3 Preschool child development programs
8.4 Quality school health education
8.5 Health promotion in postsecondary institutions
8.10 Community health promotion programs

Unintentional Injuries

9.1 Unintentional injury deaths
9.2 Unintentional injury hospitalizations
9.3 Motor vehicle crash-related deaths
9.4 Fall-related deaths
9.5 Drowning deaths
9.6 Residential fire deaths
9.7 Hip fractures among older adults
9.8 Nonfatal poisoning
9.9 Nonfatal head injuries
9.10 Nonfatal spinal cord injuries
9.21 Injury prevention counseling by clinicians

Occupational Safety and Health

10.1 Work-related injury deaths
10.2 Non-fatal work-related injuries
10.10 State occupational health and safety plans

Oral Health

13.7 Oral cancer

Maternal and Infant Health

14.4 Fetal alcohol syndrome
14.5 Low birth weight
14.7 Severe complications of pregnancy
14.10 Alcohol, tobacco, and drug use during pregnancy
14.12 Age-appropriate preconception counseling by clinicians

Heart Disease and Stroke

15.2 Stroke
15.5 Taking action to control high blood pressure

Cancer

16.3 Breast cancer

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.8 Mental retardation

HIV Infection

18.1 AIDS
18.2 HIV infection
18.5 IV-drug users in treatment
18.6 IV-drug users using uncontaminated drug paraphernalia
18.12 Outreach to drug abusers
18.13 Clinic services for HIV and other sexually transmitted diseases

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.3 Comparable data collection procedures

Data Source References

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Monitoring the Future Study (High School Senior Survey), Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD.

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Family Planning

5

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5. Family Planning

Introduction

Families are the bedrock of our society. Formally defined as a group of two or more people related by birth, marriage, or adoption and residing together in a household,[7] it is in families that children and adults are nurtured, provided for, and taught about enduring values by word and by example. It is in families that an individual first learns to make choices that promote his or her own physical and emotional health, as well as that of the broader community.

Decisions about forming a family are of critical importance. Decisions made today may have long-term consequences for a couple's ability to carry out plans for a family in the future. Family planning, the process of establishing the preferred number and spacing of children in one's family and selecting the means by which this objective is achieved, presupposes the importance of family and the importance of planning. Family planning requires that fundamental questions about an individual's relationship to the lives, health, and well-being of others be addressed.

Successful implementation of family planning choices requires mature, thoughtful decisions accompanied by motivation to carry out those decisions. It requires the exercise of personal responsibility. There are many effective means by which family planning choices can be implemented. Childbearing, adoption, abstinence from sexual activity outside of a monogamous relationship, use of contraceptive methods, natural family planning, and treatment of infertility are all means of reaching desired family planning goals.

Safe and healthful childbearing both contributes to, and is a result of, effective family planning. While miscarriage, stillbirth, and infant mortality outcomes cannot be completely prevented by effective family planning, the frequency of occurrence can be reduced. Thus, preconception counseling and good gynecological, maternal, and child health care are required for effective family planning. Reciprocally, effective family planning is a valuable aid to good maternal and child health because sufficient spacing of pregnancies helps to reduce the incidence of maternal morbidity, low birth weight, and infant mortality.

Adoption provides families for children who need permanent homes. It is one of the means by which infertile couples can implement their plans and desires for children. For individuals who are unprepared to raise their children, it is a means of finding families for them. Services and techniques to correct infertility can also help couples to reach their family planning goals.

Out-of-wedlock pregnancy has become an ever greater problem in this nation as the rate of sexual activity among adolescents has increased and the age of initiation of sexual activity has declined. Furthermore, age at first marriage has increased steadily, while fewer couples with out-of-wedlock pregnancies are marrying. Nearly one quarter of American children aged 6 and younger live below the Federal poverty level, many of them living with a single parent in female headed-families. Children from families in which the father is absent are 9 times more likely to have family incomes of less than $10,000 than those living with both parents.[58] Families with only one parent are more vulnerable to unpredictable or adverse events such as the loss of a job, parental sickness, or difficulty in meeting the needs of severely disabled or troubled children.[8] Further, female-headed families are generally poorer than two-parent families because they lack a second wage earner, because women's wages are often lower than men's, and because women who become parents at a very young age frequently lack education and job skills.

Beyond economic considerations, there is evidence that child health is affected by the marital status of his or her parents. For example, in 1983, for both whites and blacks, unmarried motherhood was associated with higher infant mortality. Among births to married white women, the infant mortality rate was 7.8 per 1,000 live births; among unmarried white women the rate was 13.1 per 1,000 live births. Among births to married black women the infant mortality rate was 14.1 per 1,000 live births, while unmarried black women experienced a rate of 19.6 infant deaths per 1,000 live births.[9] Married women are more likely than unmarried women to receive prenatal care, even when race and age are taken into account.[26] Other studies point to a relationship between broken families and child health. For example, a recent study of the health histories of 6,000 children found that children of divorced or separated parents have a one-third greater risk of developing health problems, such as pneumonia, tonsillitis, and repeated ear infections, as compared to children from intact families.[34]

In addition to fostering family formation, efforts must also be made to strengthen the family's ability to educate and transmit strong values surrounding sexuality to children in the midst of a media culture that portrays and often condones casual sexual involvement. Postponement of sexual activity until an individual is in a mutually monogamous relationship is the most certain approach to prevention of a host of sexually transmitted diseases and may also help reduce rates of unintended pregnancy.

Various methods are available to prevent pregnancy among sexually active people. These methods include barrier and hormonal methods of contraception, natural family planning methods, and sterilization. These methods vary in effectiveness in preventing pregnancy and protecting against sexually transmitted diseases, in health risks, and in compatibility with an individual's or couple's moral or religious beliefs. Choice of family planning method is important not only in terms of relative effectiveness in preventing or spacing pregnancy, but also in terms of general health. Contraceptive methods may carry adverse health risks. On the other hand, some methods, particularly barrier methods, confer some measure of protection against sexually transmitted diseases. Natural family planning may be preferred by those who find other forms of contraception unacceptable for philosophical, health, or religious reasons.

The objectives presented here focus on reducing pregnancies among teenagers younger than age 18 and unintended pregnancies among all women. In 1988, American women reported that 56 percent of their pregnancies (adjusted for underreporting of abortion) in the last 5 years had been "unintended," that is either occurring too soon or unwanted.[44] Studies suggest that unintended pregnancy may bring special risks. In 1982, among black women whose births were wanted at the time of pregnancy, 10.2 percent of births were of low birth weight; among black women whose pregnancies were unintended, the low birth weight rate was 13.6, a 33 percent difference.[31] The Institute of Medicine, in its report *Reducing Low Birthweight*, recommends that improved "family planning services [become] an integral part of overall strategies to reduce the incidence of low birth weight in infants."[25]

If family planning—serious consideration of family goals, careful selection of a family planning strategy, and conscientious adherence to that strategy—is put into general practice, the rates of unwanted and mistimed pregnancy should fall appreciably. Unwanted and unintended pregnancy has implications for abortion. The total number of legal abortions reported to the Centers for Disease Control in 1987 was approximately 1,353,000. The United States abortion rate among teenagers aged 15 through 19 in 1983 was considerably higher than for many other countries for which data are available.[21]

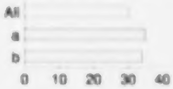
Monitoring progress towards achievement of the family planning objectives will be hampered by the paucity of solid data for many reproductive events. Calculation of pregnancy rates requires information on all types of pregnancy outcomes, including live birth, induced abortion, and spontaneous fetal loss. Periodic surveys of fertility and reproduction, such as the National Survey of Family Growth, provide high quality data about many issues of concern, including factors related to contraception, age of first sexual intercourse, and number of sexual partners. However, certain events, such as abortions, are consistently underreported by respondents. Very little information is available on adoption and adoption counseling. Data improvements over the course of the decade would aid in monitoring and achieving the Nation's family planning objectives.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

5.1 Reduce pregnancies among girls aged 17 and younger to no more than 50 per 1,000 adolescents. (Baseline: 71.1 pregnancies per 1,000 girls aged 15 through 17 in 1985)

Special Population Targets

	Pregnancies (per 1,000)	*1985 Baseline*	*2000 Target*	*Percent Decrease*
5.1a	**Black adolescent girls aged 15-19**	**186**[†]	**120**	
5.1b	**Hispanic adolescent girls aged 15-19**	**158**	**105**	

[†] *Non-white adolescents*

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

Baseline data source: The Alan Guttmacher Institute, calculated using birth data from the National Vital Statistics System, characteristics of abortion patients compiled by the Centers for Disease Control, and abortion data collected by the Alan Guttmacher Institute.

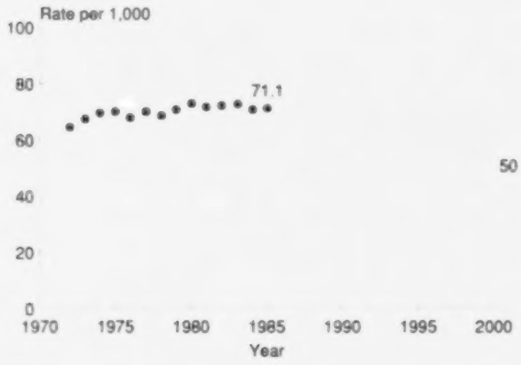


Fig. 5.1

Pregnancy rate among adolescent girls aged 15 through 17

Few situations are as life-changing for a young women and her family as an unintended, out-of-wedlock pregnancy. The manner in which she, her family, and her partner resolve the crisis may have life-long consequences for the people involved and for the broader community.

This objective targets reductions in pregnancies among all adolescents under age 18, with the assumption that most of such pregnancies are unintended pregnancies among unmarried teens. Although the baseline data for this objective do not exclude pregnancies among those who are married, married adolescents constitute only 1.9 percent of the entire population of adolescent girls aged 15 through 17.[45] In 1981, an estimated 84 percent of pregnancies among young women under age 20 were unintended.[30] Further, 96 percent of abortions among women aged 19 and younger are to unmarried women.[21]

When pregnancy rates for all teenagers aged 15 through 19 (110 per 1,000 women in 1985) are compared to rates among Hispanic women (158 per 1,000 women in 1985), Hispanic rates appear to be higher than the total population. Thus, a special population target for Hispanic teenagers has been included in this objective. However, teenage Hispanic women are more likely to have married than either black or white teenage women. Approximately 4 percent of Hispanic women aged 15 through 17 have married, compared to approximately 2 percent of white women and 1 percent of black women aged 15 through 17. Twenty-one percent of Hispanic women aged 18 and 19 have married, while 15 percent of white women and 3 percent of black women aged 18 and 19 have done so.[45]

Nearly 70 percent of births to Hispanic women aged 17 are to unmarried women.[41] Thus, it is assumed that this objective can be achieved without reducing intended pregnancies among married women.

When the pregnancy rate for black teenagers is compared to that of all teenagers, pregnancy rate differences are even more profound. The Alan Guttmacher Institute estimates that there were 186 pregnancies per 1,000 nonwhite women aged 15 through 19 in 1985. Approximately 80 percent of these nonwhite women are black.[21] Further evidence of disparity is available by examining the proportions of women who have ever been pregnant. By age 20, nearly 40 percent of all women have ever been pregnant;[21] approximately 60 percent of black women have ever been pregnant by age 20.[47] However, not all of these pregnancies are among unmarried women. The targets for both black and Hispanic teenagers can be met by reducing unintended pregnancies. Intended pregnancies are not targeted for reduction.

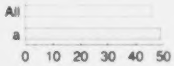
Recent research suggests that the higher frequency of poor health outcomes among adolescents who give birth do not stem from intrinsic medical risk, but from socioeconomic and behavioral factors, such as low income, low levels of education, and poor nutritional patterns.[4,47] Thus, while it may be possible to control these factors and demonstrate that healthy teens can have healthy pregnancies, some of the factors that may predispose a young woman to become pregnant also place her and her baby at risk for poor health outcomes. The negative effects of unintended adolescent pregnancy include induced abortion (43 percent of pregnancies among young women aged 15 through 17 end in abortion),[21] emotional and psychological disruption, social and economic effects on the adolescent and her child, and economic consequences for society at large.

The social and economic consequences of adolescent pregnancy have been extensively studied in recent years. Well planned studies consistently show that adolescent pregnancy and child-rearing generally retard an adolescent's achievement of social and economic independence.[15] Interruption of an adolescent's progress toward social and economic independence is usually caused by interruption of formal schooling. In addition to the personal costs to teen parents and their babies, societal costs of teen childbearing are immense. In 1985, an estimated $16.6 billion in public funds were spent to support families begun by teenage mothers, with virtually all of these costs associated with public assistance programs including Aid to Families with Dependent Children, Medicaid, and Food Stamps.[32]

This objective and its special population targets are particularly challenging. Pregnancy rates among young women aged 15 through 17 showed virtually no change between 1979 and 1985, hovering around 70 per 1,000 women (70.1 in 1979 and 71.1 in 1985). The effectiveness of various efforts to reduce rates of adolescent pregnancy will vary depending on the type of community involved. Programs should be tailored to local standards and values. No simple, one-dimensional approach is likely to succeed, given the complexity of the issue and the number of factors influencing an individual's decision to become sexually active. A successful approach is one that promotes development of mature, responsible individuals who understand the consequences of their actions, and who are goal-oriented and self-disciplined. Mature teens understand that their actions today have consequences for tomorrow and that the choices they make today will be with them for the rest of their lives.

5.2 Reduce to no more than 30 percent the proportion of all pregnancies that are unintended. (Baseline: 56 percent of pregnancies in the previous 5 years were unintended, either unwanted or earlier than desired, in 1988)

Special Population Target

Unintended Pregnancies	*1988 Baseline*	*2000 Target*	*Percent Decrease*
5.2a Black women	**78%**	**40%**	

Baseline data source: National Survey of Family Growth, CDC, adjusted for underreporting of abortion using an adjustment factor from the Alan Guttmacher Institute.

Measuring whether or not pregnancies are intended is an uncertain process. Unintended pregnancies include those pregnancies that women report they did not want at all (unwanted pregnancies) and those that they report were earlier than they wanted (mistimed). Assessing unintended pregnancy is important as an indication of the extent to which couples are able to control the timing and spacing of their pregnancies.

Abstinence is the most effective means of avoiding unintended pregnancy and sexually transmitted diseases. Without effective contraception, 89 percent of couples who engage in sexual intercourse regularly will conceive within one year.[20,56] To use contraception effectively, couples must understand the effectiveness of alternate methods and the correct way to use their chosen method. Even "perfect use" (correct and consistent) can result in unintended pregnancy. In 1987, approximately 43 percent of unintended pregnancies occurred among couples who were using a contraceptive method the month the pregnancy began.[17]

Teenagers account for about one third of unintended pregnancies with three quarters of teenage pregnancies occurring among teens who are not practicing contraception. Women aged 20 through 24 account for the largest proportion of unintended pregnancies (36 percent); women aged 25 through 34 account for about 27 percent. Women aged 35 through 44 account for only four percent of all unintended pregnancies.[61] In 1988, approximately 39 percent of unintended pregnancies during the previous 5 years were to married women.[44]

Effective family planning and the avoidance of unintended pregnancy can improve infant health. The Institute of Medicine's 1985 report *Preventing Low Birthweight* found "that the reduction in infant mortality in the United States over the past 20 years is due in part to effective family planning."[25] For example, data from the United States 1960 Live Birth Cohort Study showed that 27 percent of the reduction in infant mortality between 1965 and 1967 was due to changes in women's age and parity (number of children born to each woman), which was attributed to individual contraceptive practice. For many women, contraception increases the interval between births. Having a short interval between births is a well established risk factor for low birth weight. In so far as contraception lengthens birth intervals, it can contribute to a reduction in low birth weight. A study of national data found low birth weight in 19 percent of births that occurred within one year of a previous birth, a proportion 3 to 4.5 times higher than the proportion found for longer interval births.[42]

Women who plan their pregnancies tend to seek prenatal care earlier than women who become pregnant unintentionally. Data from the 1980 Natality Survey indicate that married women who wanted a child at the time they became pregnant were more likely to receive early prenatal care than women who would have preferred to become pregnant at a later time. Women who had not planned to have any more children showed the longest delays in seeking prenatal care. The study attributed about one-third of the black-white difference in the reported number of prenatal visits to higher levels of unintended pregnancy among black women.[25]

Approaches to reducing rates of unintended pregnancy include reducing rates of sexual activity, approaching sexual activity with a greater sense of responsibility, and increased effective use of family planning methods. For unmarried people, for whom the consequences of unintended pregnancy are generally the most serious (particularly adolescents), postponement of sexual activity is the most effective means of preventing unintended pregnancy. For married couples and other sexually active people, better understanding of fertility and improved use of family planning methods are needed.

5.3 Reduce the prevalence of infertility to no more than 6.5 percent. (Baseline: 7.9 percent of married couples with wives aged 15 through 44 in 1988)

Special Population Targets

	Prevalence of Infertility	*1988 Baseline*	*2000 Target*	*Percent Decrease*
5.3a	**Black couples**	**12.1%**	**9%**	
5.3b	**Hispanic couples**	**12.4%**	**9%**	

Note: Infertility is the failure of couples to conceive after 12 months of intercourse without contraception.

Baseline data source: National Survey of Family Growth, CDC.

Infertility affects an estimated 2.4 million married couples and an unknown number of potential parents among unmarried couples and singles. When infertility estimates include couples who are surgically sterile, approximately 14 percent of couples with wives aged 15 through 44 are infertile. Diagnosis and treatment of infertility is costly: in 1987, Americans spent about $1 billion to combat infertility.[49] The overall incidence of infertility remained relatively constant between 1965 and 1982, with only one group, married couples with wives aged 20 through 24, experiencing an increase in infertility (from 3.6 percent in 1965 to 10.6 percent in 1982). The reason for this increase is not clear. Possible explanations include a link to the increase in the gonorrhea rate (which tripled between 1960 and 1977), the use of intrauterine devises (IUDs) which may increase the risk of pelvic inflammatory disease, complications or infections following childbirth or abortion, and environmental factors such as radiation, toxic chemicals, and pollution.[46]

An analysis of cycle III of the National Survey of Family Growth revealed that the proportion of women with fecundity impairments who want to have more children is higher among Hispanic women than non-Hispanic women (6.4 percent versus 4.3 percent) and higher among nonblack women than black women (4.6 percent versus 3.8 percent). The proportion who want more children is higher among those women at or above 150 percent of the poverty level than among poorer women (5.1 percent versus 2.7 percent). Black women in need of infertility services are less likely to have obtained services than nonblack women (30 percent versus 51 percent) and Hispanic women are less likely than non-Hispanic women (39 versus 50 percent) to receive needed services.[22]

Three factors most often contribute to infertility among women: problems in ovulation, blocked or scarred fallopian tubes, and endometriosis (presence in lower abdomen of tissue from the uterine lining). In men, the most frequent causes are abnormal or too few sperm. For as many as one in five infertile couples, a cause is never found. Infertility arising from sexually transmitted diseases—an estimated 20 percent of the cases in the United States—is the most preventable.[23] The reduction in infertility targeted by this objective roughly parallels reductions in sexually transmitted diseases targeted in the sexually transmitted disease priority area. The sexually transmitted disease objectives target 30 percent and 20 percent reductions, respectively, in the incidence of gonorrhea and chlamydia. Such reductions could reduce the infertility rate by approximately 5 percent.

Additional, nonquantified reductions in infertility are possible through improved preconception counseling, especially counseling related to prevention of sexually transmitted diseases.

Despite recent advances in the medical treatment of infertility, outcomes for individual couples entering treatment are still uncertain. Among treatments for infertility are fertility awareness and fertility monitoring, medical induction of ovulation, surgical procedures to correct blockage of the fallopian tubes, artificial insemination, and *in vitro* fertilization and other assisted reproductive techniques. These alternatives vary in cost, potential risks, invasiveness, effectiveness, and acceptability to people on moral and religious grounds.

Given the high cost of infertility services and their generally low success rates, more attention should be given to improving adoption opportunities. Adoption is frequently not considered by couples due to a lack of information or to misinformation about the adoption process. At present, 25 percent of children in foster care are under age six and three percent are under age one. Black children are over-represented in the foster care population, comprising 33 percent of all children.[14] Greater efforts should be made to reach black couples who want children with information about adoption. Improving adoption outreach services could help solve two important problems: assuring that couples who want children will have them and reducing the number of children placed in foster care without permanent homes. Since children in foster care are at higher risk for physical and emotional problems, families would be more motivated to assume the responsibility of adoption if post-adoption services and reimbursement for health care expenses were made available.

Risk Reduction Objectives

5.4* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

Baseline data sources: National Survey of Family Growth, CDC; National Survey of Adolescent Males.

One in ten young women aged 19 and younger become pregnant each year, and approximately 40 percent will experience at least one pregnancy before age 20. Initiation of sexual activity at a young age is a primary risk factor for unintended pregnancy. By age 21, approximately one in five young people have acquired a sexually transmitted disease. Because only some teenagers are sexually active, this amounts to a rate of at least 25 percent among those who are (see *Sexually Transmitted Diseases*). Sexually transmitted diseases can have profound long term consequences, including infertility and cancer. HIV infection, also one of the sexually transmitted diseases, is incurable and deadly.

Sexual relationships among teenagers are often characterized by extreme impermanence. As a result, 58 percent of sexually active young women aged 15 through 19 have had two or more sexual partners and seven percent have had 10 or more partners.[46] According to the most recent data from the National Survey of Family Growth, three quarters of young women have had sexual intercourse by their twentieth birthday. Teenagers report that social pressure is the chief reason why their peers do not wait until they are older to have sexual intercourse.[50] Sexual activity at young ages is more common among young people from low socioeconomic status families, and among adolescents who smoke, use alcohol or other drugs, or have evidence of delinquency.[24,28,43,62,63]

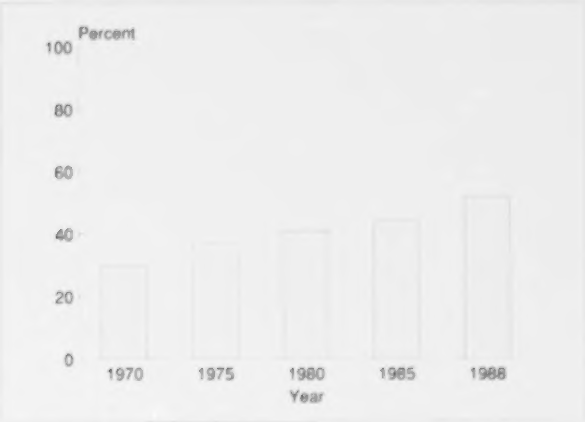


Fig. 5.4

Percentage of adolescent girls aged 15 through 19 who have had sexual intercourse

There are some indications that early sexual intercourse by adolescents can have negative effects on social and psychological development. One study found that early sexual intercourse among adolescent white males was associated inversely with self-reported grades in school.[5] An inverse association was also found between white females' college aspirations and sexual experience. Initiation of sexual intercourse by teenagers is associated with a number of factors, including academic achievement, religiousness, relationships between parents and their children, puberty, and other developmental characteristics, race, and socioeconomic status. For example, teenagers who score high on intelligence tests, are academically motivated, and are doing well in school are less likely to initiate sexual activity at a young age.[12,15,27,28,37,38,40,57] Young people are more likely to be sexually experienced if they perceive themselves to be in poor communication with their parents.[27,53]

Adolescents who report their discipline received at home as "not strict at all" are more than twice as likely to participate in nonmarital intercourse than adolescents who report a moderate amount of strictness and rules. Also, teenagers who report their parents as "extremely strict" are slightly more likely to be involved in nonmarital sex than those reporting moderate discipline. Women aged 15 through 19 are more likely to be sexually active if they are not regular church attenders and if they report that religion is not very important to them.[53] Sexual activity at the youngest ages may be the result of sexual abuse or incest. The issue of coercion has important implications for how sexual abstinence is promoted among teenagers. In the case of coercive relationships, teenagers must be taught not only to say "no," but also to say no effectively and, whenever possible, to translate it into action. Victims of coercive/abusive relationships may need help in bringing these relationships to the attention of people who can help them. Parents, family members, physicians, school nurses, social workers, teachers, and others who are in contact with young adolescents they know to be sexually active should be aware of the possibility of abuse. All States have statutes that require physicians, other professionals, and citizens to report suspected abuse.

Research supports widely held beliefs that adolescents can respond positively to directive counseling from adults about sexuality. For example, one study found that when staff of contraceptive clinics employed authoritative guidance in helping clients to select contraceptive methods, clients' contraceptive use was substantially improved.[48] Other research supports the creation of environments within communities that support teen decisions to postpone sexual activity. Some successful programs have taken a community approach involving parents, the media, the schools, and the clergy in preventing teen pregnancy. One study found that such an approach was successful in reducing teen sexual activity and improving contraceptive use among teens who were sexually active.[60]

Although the theoretical effectiveness rates of some contraceptives are quite high, adolescents are not generally effective users of contraception. In addition, the most effective method of contraception and the method most commonly used by young women, the oral contraceptive pill, does not protect against sexually transmitted diseases. Conversely, barrier methods, particularly the condom, provide substantial protection against sexually transmitted diseases, but are most likely to be used ineffectively or sporadically by adolescents. Thus, decreasing the level of sexual activity should significantly improve adolescent health by decreasing unintended pregnancies and sexually transmitted diseases.

*This objective also appears as Objective 18.3 in *HIV Infection* and as Objective 19.9 in *Sexually Transmitted Diseases*.

5.5 Increase to at least 40 percent the proportion of ever sexually active adolescents aged 17 and younger who have abstained from sexual activity for the previous 3 months. (Baseline: 26 percent of sexually active girls aged 15 through 17 in 1988)

Baseline data source: National Survey of Family Growth, CDC.

Many factors are strongly associated with sexual activity before marriage, including characteristics such as puberty, age, race, and socioeconomic status, religiousness, intelligence and academic achievement, and dating behavior; family characteristics such as family background and parental support and control; and the influence of peers.[47] When young adolescent girls begin having sexual intercourse, it is generally infrequent and unpredictable.[47] Some adolescents who have had recent intercourse view the event as atypical behavior which they are unlikely to repeat.[18]

Negative consequences of nonmarital sexual intercourse can include elevated risk of acquiring a sexually transmitted disease and suffering impaired fertility as a result of sexually transmitted infections. Therefore, abstaining from further nonmarital sexual intercourse protects adolescents from a variety of risks to health.

Peers of the same gender are a major influence on adolescent attitudes about sexual activity. The proportion of their same-sex peers that teenagers believe are sexually active and how sexually active they believe them to be are powerful predictors of sexual experience among adolescent boys and girls.[47] However, individual behavior and attitudes are more closely related to what adolescents think their friends are doing than what they are actually doing.

Recent studies[6] of sexual victimization as a factor in adolescent pregnancy suggest that coercive sexual relationships are more common than previously believed.[6] Even in noncoercive sexual relationships among adolescents, there may be strong feelings of ambivalence or opposition to continuing sexual activity. According to a recent study of adolescents in Utah, half of the adolescents who reported that they were sexually active stated that they desired not to be.[18]

Programs that address these feelings of ambivalence about sexual activity, present these feelings as normal, and encourage teens to postpone further sexual activity can help teens avoid further risks to their health.

5.6 Increase to at least 90 percent the proportion of sexually active, unmarried people aged 19 and younger who use contraception, especially combined method contraception that both effectively prevents pregnancy and provides barrier protection against disease. (Baseline: 78 percent at most recent intercourse and 63 percent at first intercourse; 2 percent used oral contraceptives and the condom at most recent intercourse; among young women aged 15 through 19 reporting in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Baseline data source: National Survey of Family Growth, CDC.

The only certain way to prevent teenage pregnancy is through abstinence from sexual intercourse. Abstinence also provides absolute protection from sexually transmitted diseases, including AIDS. Mutually faithful monogamy with an uninfected partner will also protect people from sexually transmitted diseases. However, for sexually active teenagers who will not postpone sexual activity and who do not wish to become pregnant or infected with a sexually transmitted disease, consistent use of dual methods of contraception is the most effective means of reducing rates of pregnancy and sexually transmitted diseases.

Eighty four percent of teenage pregnancies in 1981 were unintended[30] and less than 5 percent of abortions to women aged 19 and younger occur among married women.[21] Only one third of teenagers who have had sexual intercourse say they use contraceptives all the time. Low-income teenagers are the least likely to use contraceptives consistently. Sexually active teenagers who have talked about sex, pregnancy, and contraception with their parents appear to be more likely than other teenagers to use birth control all the time.[16] Adolescents with a stronger appreciation of the consequences if they or their partner becomes pregnant are also more likely to use contraceptives consistently.[38]

Approximately half of all first nonmarital pregnancies occur in the first six months following initial sexual intercourse; more than one fifth of these pregnancies occur in the first month.[64] Approximately 60 percent of sexually active adolescents who have never used contraceptives become pregnant within 1 year of initiating sexual intercourse, whereas 30 percent of those using a method inconsistently, 14 percent of those always using some method (including withdrawal), and only 7 percent using a medically prescribed method become pregnant.[2,3]

Different methods of contraception have different characteristics in terms of ease of use and effectiveness in preventing pregnancy and sexually transmitted diseases. Due to these differences among contraceptives and contraceptive uses, it is not sufficient merely to recommend a general increase in the use of contraception.

In terms of preventing pregnancy, hormonal contraceptives, such as the oral contraceptive, are the most effective of the commonly available means of reversible contraception. Oral contraceptives, if used correctly and consistently, provide a very high degree of protection from pregnancy. However, oral contraceptives are not effective in reducing transmission of sexually transmitted diseases, including AIDS. Barrier methods, such as the diaphragm, the cervical cap, and the condom are, in general, less effective than hormonal contraceptives in preventing pregnancy. Nevertheless, barrier methods, especially the condom used with a spermicide, can provide substantial protection from sexually transmitted diseases if used correctly. Therefore, for protection against sexually transmitted diseases and unintended pregnancy, sexually active nonmonogamous people should use dual methods of contraception. In this objective, use of condoms in combination with oral contraceptives is a proxy measure for the use of any combination of a barrier method with another method that is effective in preventing pregnancy. For those who do not use oral contraceptives, a combination of two barrier methods such as a condom and a diaphragm can provide a high degree of protection from both pregnancy and sexually transmitted diseases.

The Surgeon General has emphasized that abstinence and mutually faithful monogamy are the only certain ways to prevent AIDS and other sexually transmitted diseases and has also recommended that sexually active people use condoms with a spermicide (such as nonoxynol 9) even if they are also using a highly effective method to prevent pregnancy.

5.7 Increase the effectiveness with which family planning methods are used, as measured by a decrease to no more than 5 percent in the proportion of couples experiencing pregnancy despite use of a contraceptive method. (Baseline: Approximately 10 percent of women using reversible contraceptive methods experienced an unintended pregnancy in 1982)

Baseline data source: "Public Sector Savings Resulting from Expenditures for Contraceptive Services."

Even couples who use contraceptive techniques are at risk for unintended pregnancy, especially if they do not use those techniques correctly and consistently. This may be particularly true for young people. A survey of sexually active black high school males found that only 60 percent had used a contraceptive at their last sexual encounter, and most lacked accurate knowledge about the relative effectiveness and availability of various birth control methods.[10] Inconsistent or incorrect use of contraceptives is reported by at least half of women receiving abortion counseling.[54] Although those who do not use contraception comprise only 12 percent of women of childbearing age who are at risk of unintended pregnancy, in 1985, more than half (57 percent) of all unintended pregnancies were to women who were not using a contraceptive method. The remaining 43 percent of unintended pregnancies were to women who experienced contraceptive failure—e.g., they were using a method to prevent pregnancy during the month they conceived.[29]

It has been estimated that as many as one-third of all unintended pregnancies and 500,000 abortions could be prevented each year if the proportion of women at risk for unintended pregnancy and not using contraception were reduced by half.[39] Because unintended pregnancy rates among couples who are not using contraception are so high, even a small increase in the proportion of people at risk for unintended pregnancy who use a contraceptive method could result in relatively large reductions in unintended pregnancies.

Additional reductions in unintended pregnancy are possible through improved use of contraceptive methods. Approximately 10 percent of couples who are using a method to avoid pregnancy fail to prevent conception each year. A comparison of annual contraceptive failure rates is instructive. When used correctly and consistently, the failure rate of oral contraceptives is as low as 0.1 percent; under typical usage conditions, the failure rate (proportion of women who conceive during 1 year of use) is about 3 percent. When used correctly, condoms have a 2 percent failure rate in preventing pregnancy, but the rate may be as high as 12 percent under conditions of typical usage. The diaphragm, in combination with spermicide, has a failure rate of about 3 percent when used correctly and consistently, but the average failure rate is approximately 18 percent. Natural family planning (periodic abstinence) when used correctly and consistently has an expected failure rate of 2 to 10 percent, but an average failure rate of about 20 percent.[56] One study that corrected for underreporting of abortions reports generally higher contraceptive failure rates: 5.8 percent for oral contraceptives; 15.7 percent for condom use; 18.3 percent for the diaphragm; 19.1 percent for natural family planning (including scientifically accepted methods, as well as methods such as calendar rhythm, that are scientifically outmoded); 30 percent for spermicides; and 19.3 percent for other methods (standardized for age, race, and marital status).[29]

In almost all stratifications by race, age, and marital status, contraceptive failure rates are highest among unmarried, nonwhite women. For example, only two percent of married white pill users aged 35 through 44 failed to prevent conception in their first year of pill use compared to 18 percent of unmarried, nonwhite pill users aged 20 and younger.[29] Women with family incomes that are less than twice the Federal poverty level experience contraceptive failure about two-thirds more often than do women with higher incomes, regardless of the method they use. These high failure rates have been associated with such factors as lower education and greater difficulty in obtaining family planning supplies and services.[29] This objective can be accomplished through improved counseling and instruction by primary care providers, including improved counseling services at family planning, sexually transmitted disease, and maternal and infant health clinics. Manufacturers of contraceptives can contribute by assuring that instructions included with their products are clear and explicit. Additional research should be conducted to explain variations in compliance so that products and instructions can be modified to improve successful use.

Services and Protection Objectives

5.8 Increase to at least 85 percent the proportion of people aged 10 through 18 who have discussed human sexuality, including values surrounding sexuality, with their parents and/or have received information through another parentally endorsed source, such as youth, school, or religious programs. (Baseline: 66 percent of people aged 13 through 18 have discussed sexuality with their parents; reported in 1986)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

Baseline data source: "American Teens Speak."

Parents are the first and most important educators of their children in matters related to sexual behavior. From them, children receive their first lessons in sexual morality and appropriate sexual conduct, including lessons about the meaning of mutual respect, love, and marital fidelity.

Children also learn about sexuality from other sources, their schools, their peers, and the mass media. Most young people consider their parents their most important source of information about sexuality. Friends are the second most important, school courses rank third, with television considered the fourth most important source.[19]

Parental interest or involvement with their teenager is related to postponement of sexual activity. Students who report parents as very interested in their grades or in their personal achievements (sports, music, dance, etc.) are about twice as likely to report sexual abstinence as those students who say that parents do not feel grades or achievements are important.[35] Many national youth-serving organizations have developed programs of sexuality education that they consider effective.[13]

School-based sex education has been shown to increase knowledge about issues surrounding sexuality, but has not been shown to result in lower rates of sexual intercourse or pregnancy.[1,11,33,55,65] Research consistently shows that family support, family guidance, and family structure have a significant effect on sexual activity. One of the strongest predictors of adolescent sexual attitudes and behavior is the marital status of the parents.

Adolescents living with both parents have the least permissive attitudes toward nonmarital sex, followed by those living with a parent who has remarried.[36]

Parents should be given encouragement and all reasonable assistance with fulfilling their responsibility for teaching their children about sexuality. The rising popularity of parent skills classes, along with increased interest in parental involvement in educational programs for their children may present an opportunity for giving parents practical advice about ways of communicating with their children about sex.

5.9 Increase to at least 90 percent the proportion of pregnancy counselors who offer positive, accurate information about adoption to their unmarried patients with unintended pregnancies. (Baseline: 60 percent of pregnancy counselors in 1984)

Note: Pregnancy counselors are any providers of health or social services who discuss the management or outcome of pregnancy with a woman after she has received a diagnosis of pregnancy.

Baseline data source: "Orientation of Pregnancy Counselors Toward Adoption."

Adoption provides families for children born to couples who are unprepared to raise a child and seek a loving, stable home for their child and is an important method of family planning for infertile couples. Although many prospective parents are waiting to adopt children, there are relatively few infants available for adoption due to the small number (about 25,000) of infants placed for adoption each year. Of the approximately one million adolescent pregnancies annually, fewer than four percent of the children born are placed for adoption.[46] Forty-three percent of adolescent pregnancies end in abortion.

While a number of factors influence whether or not a woman faced with an unintended pregnancy places the child for adoption, it is clear that despite positive attitudes toward adoption, pregnancy counselors are often poorly informed about adoption. Many pregnancy counselors do not routinely discuss the adoption option with their clients who are faced with unintended pregnancies. This failure to discuss adoption may stem from the counselor's assumption that clients will react unfavorably to the idea of adoption.

Adoption is a practice with a very long tradition in western society. It should be recognized among providers of prenatal care and pregnancy counselors that adoption can work to the benefit of biological parents, the adoptive parents, and most importantly, the child.

5.10* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

The purpose of preconception care and counseling is to ensure that couples are healthy prior to pregnancy and prepared to assume the responsibilities of parenthood, thereby reducing the risk of poor pregnancy outcomes. Many medical conditions, personal behaviors, and environmental conditions associated with poor pregnancy outcome can be identified and should be modified or treated prior to conception. Preconception identification of medical illness, unhealthy behaviors, or genetic disorders provides an opportunity for counseling, appropriate treatment, pregnancy planning, early entry into prenatal care, or avoidance of pregnancy. Family planning services should be an integral part of preconception care to reduce unintended pregnancies and to assure adequate spacing between pregnancies.[52]

Young adults are faced with myriad decisions with life-long consequences, including when, and whether, to start a family. Decisions about sexual activity confront them routinely, yet many are largely unaware of the nature or severity of the consequences, which range from the responsibilities of becoming a parent to disease-related infertility and cancer. Of those who are sexually active, some may not have the knowledge they need to prevent unintended pregnancy or sexually transmitted diseases. Further, contraceptive failure rates—rates of accidental pregnancy experienced during use of a contraceptive method—are high in the United States, ranging from 3 percent for oral contraceptives to as high as 30 percent for spermicides. And those who become pregnant may not be aware that many behaviors, such as tobacco and alcohol use prior to and after conception, can have profound effects on future offspring. Tobacco use is associated with low birth weight and alcohol consumption during pregnancy can lead to birth defects (fetal alcohol syndrome).

Preconception counseling should begin well before conception. Because of the potential adverse consequences of unwise sexual activity for future reproductive, maternal, and infant health, ideally preconception care should commence before sexual activity starts. Primary care providers should treat their patients of reproductive or pre-reproductive age with the understanding that many of them will desire to have children at some future time. Primary care providers may wish to initiate preconception care by discussing any plans that the client may have for bearing children or raising a family. Though many clients, especially the younger ones, may not have formed any conscious plans about having children, they may benefit from a discussion of their future fertility.

The U.S. Preventive Services Task Force, in the *Guide to Clinical Preventive Services*[59] recommends that clinicians obtain a detailed sexual history from all adolescent and adult patients, male and female. For sexually active patients, the interview should include a discussion of the sexual practices and feelings of the patient and partner(s), as well as an assessment of the level of patient concern about the risk of unintended pregnancy. The *Guide* further suggests that empathy, confidentiality, and a nonjudgmental supportive attitude are especially important when discussing issues of sexuality with adolescents. Clinicians should involve young pubertal patients and, where appropriate, their parents in early, open discussion of sexual development and effective methods to prevent unintended pregnancy and sexually transmitted diseases. Sexually abstinent adolescents should be encouraged to remain abstinent, and they should also be given support in asserting themselves in the event of an unwelcome or coercive sexual relationship.

*This objective also appears as Objective 14.12 in *Maternal and Infant Health.*

5.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

Baseline data source: State Family Planning Directors.

*For commentary, see Objective 19.11 in *Sexually Transmitted Diseases.* This objective also appears as Objective 18.13 in *HIV Infection.*

Personnel Needs

Priorities for ensuring trained personnel to achieve the family planning objectives include the following:

- Determine the number and types of health professionals needed to accomplish the practice, education, and research aspects of the objectives.
- Establish sufficient, appropriate curricula on family planning in schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of family planning information.
- Expand continuing education on family planning through national professional associations whose members have roles in the delivery of health, mental health, education, and related services.

In addition, human sexuality should become an integral part of the basic education of primary care and mental health care providers. Such curricula should place particular emphasis on helping people avoid unintended pregnancy and transmission of sexually transmitted diseases, especially HIV. Further, primary care and mental health care providers should receive training in counseling their patients about sexual behavior, especially in the inherent health risks associated with having multiple sexual partners.

Health professional education should also be improved through the addition of curricula addressing adoption. Infertile couples frequently seek medical advice in the hopes of overcoming fertility problems. Couples who are experiencing unintended pregnancy also seek advice from health professionals. Thus, with appropriate training, health professionals could become an invaluable source of adoption information for people who are most in need of such information.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing data sources are not available to track these objectives.

Periodic surveys and/or supplements to existing surveys can help track Objectives 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, and 5.8.

New data sources are needed to track Objectives 5.9, 5.10, and 5.11.

High Priority Needs

- Improved reporting of abortion data. Complete, national data on legal induced abortions are available only in the aggregate; abortions are seriously underreported in surveys. Abortion data are important for focusing the delivery of family planning services and in calculating pregnancy rates. Pregnancy rates are an important measure of fertility and are a necessary component for the calculation of those rates.
- Improved surveillance for miscarriages and stillbirths (spontaneous fetal losses). Rates are incompletely reported in national reporting systems. Estimates are typically made on the basis of survey data, such as the National Survey of Family Growth, or on the basis of models assuming a constant relationship between abortion and live birth rates on the one hand and miscarriage/stillbirth rates on the other.

- More data on the race, ethnicity, and economic status of young women who become pregnant as adolescents. Racial and ethnic identifiers are needed to design culturally sensitive programs to reduce teenage pregnancy and to improve understanding of the nature and extent of teenage pregnancy.

Research Needs

- More information is needed on the characteristics of people who adopt children and who chose adoption as a means of resolving unintended pregnancy. This information would be very useful in improving the design of programs intended to increase adoption.
- American women have a comparatively low level of effective contraceptive use and are more likely than their counterparts in other developed countries not to use any method at all. Additional basic research should be conducted to assess nonuse, incorrect use, and effective methods for increasing correct contraceptive use.
- The determinants and consequences of early sexual intercourse are poorly understood. Additional research is needed to better understand early initiation, its consequences, and how it might be prevented.
- Existing contraceptive methods are often unacceptable to men and women because of difficulty or discomfort in use, expense, or undesirable side-effects. Improved contraceptive methods are needed for men and women. Research should focus on developing methods that are easier to use, that have fewer side effects, and that are less expensive.

Related Objectives From Other Priority Areas

Tobacco

3.4 Cigarette smoking
3.7 Smoking cessation during pregnancy

Educational and Community-Based Programs

8.4 Quality school health education
8.9 Family discussion of health-related issues
8.10 Community health promotion programs

Occupational Safety and Health

10.8 Occupational lead exposure

Environmental Health

11.11 Home testing for lead-based paint

Maternal and Infant Health

14.1 Infant mortality
14.2 Fetal deaths
14.4 Fetal alcohol syndrome
14.5 Low birth weight
14.10 Alcohol, tobacco, and drug use during pregnancy
14.12 Age-appropriate preconception counseling by clinicians

HIV Infection

18.4 Condom use

Sexually Transmitted Diseases

19.1 Gonorrhea
19.2 Chlamydia
19.3 Syphilis
19.4 Congenital syphilis
19.6 Pelvic inflammatory disease
19.8 Repeat gonorrhea infection
19.12 Sexually transmitted disease education in schools
19.13 Correct management of sexually transmitted disease cases
19.14 Counseling to prevent sexually transmitted diseases
19.15 Partner notification of exposure to sexually transmitted disease

Clinical Preventive Services

21.2 Receipt of recommended services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

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Mental Health and Mental Disorders

6

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6. Mental Health and Mental Disorders

Introduction

Mental health is a general term used to refer not only to the absence of mental disorders but also to the ability of an individual to negotiate the daily challenges and social interactions of life without experiencing cognitive, emotional, or behavioral dysfunction. Mental health and mental disorders can be affected by numerous factors ranging from biologic and genetic vulnerabilities, acute or chronic physical dysfunction, to environmental conditions and stresses. An estimated 23 million adults living in communities in the United States are severely incapacitated from mental disorders, not including substance abuse, with almost twice that number having experienced at least one diagnosable disorder at some point in their lives.[45] In 1980 mental disorders were conservatively estimated to cost the American public $73 billion annually, about half of which reflected lost productivity.[24] Suicide is clearly the most serious potential outcome of mental disorders. About 30,000 Americans each year, including more than 5,000 under the age of 25, take their own lives, and mental disorders are major contributing factors.[24] Schizophrenic disorders, which can produce the most complex functional disabilities, affect about 1 percent of the adult population. Depression and associated affective/mood disorders, which affect approximately 5 percent of the population at any one time,[45] are also major risk factors for suicide.

Recent research on the level of incapacity associated with mental disorders emphasizes just how debilitating they can be. For example, the number of bed-days and other forms of disability associated with depression is comparable to or greater than that associated with eight major chronic medical conditions.[57] Early identification and specific treatment and rehabilitation measures can significantly reduce the duration and level of disability associated with mental disorders, as well as decrease the likelihood of reemergence of symptoms.[31] Unfortunately, a very large proportion of individuals with mental disorders, including two-thirds of those with depression, do not receive treatment.

Various estimates suggest that 10-12 percent of children and adolescents suffer from mental disorders, including autism, attention deficit-hyperactivity, and depression. Mental disorders of youth, including developmental delays and specific skill and conduct disorders, are associated with additional cognitive, emotional, and behavioral dysfunctions that dramatically shape the life course.[14,15] Though specific early identification, treatment, and rehabilitation measures are available to reduce the levels of dysfunction in children and adolescents, 70 to 80 percent do not receive appropriate services.[25,43]

Some crosscutting approaches to the reduction of risk for multiple and overlapping disorders have been developed. One major approach focuses on the enhancement of early development. This approach builds on the potentially protective role of early and sustained emotional security and support during infancy and childhood within the social context of a caring family, as well as the importance of assuring biologic integrity, especially during the perinatal period, with attention to general health, nutrition, and protection from exposure to environmental pollutants.

Some early interventions with mothers and children have been systematically developed and replicated, as have some interventions in school settings. Evidence suggests that they can alter or reverse the progression of developmental deficits and encourage a cumulative acquisition of developmental achievements which, in turn, contribute over the long term to productive work and family lives. Further investigation is needed to determine whether these interventions also prevent the onset of mental disorders.

Biologic approaches have also been used to study the causes of mental disorders, with the ultimate goal of being able to identify and intervene with high-risk individuals. Such interventions would ideally take place prior to the onset of illness, or at least earlier in the course of illness than is now possible. Many areas of biologic research are rapidly advancing and providing exciting and encouraging results. Imaging technology, such as positron emission tomography and magnetic resonance imaging, has been applied in many mental disorders including schizophrenia and panic disorder and has begun to elucidate structural and functional brain abnormalities. Advances have also been made in discerning the roles of various neurotransmitter systems in the etiologies of mental disorders. Psychoneuroendocrinology is investigating the relationships between the endocrine system and the central nervous system and behavior. Molecular genetics and genetic linkage studies are examining the inheritance of mental disorders and associated biochemical abnormalities. The rapid advance in our understanding of the biologic correlates and causes of mental disorders is a positive sign for the development of prevention strategies in the future.

Another promising strategy for the promotion of mental health is the focus on decreasing stressors and/or increasing the capacity of the individual to cope with stress. The contribution of stress to occurrence of specific dysfunctions is not fully understood and can be complicated in that stress takes many forms, its causal role is often indirect, a complex of interacting variables may be involved, and numerous, often overlapping, outcomes may be present. Nonetheless, critical life events, chronic role strain, the accumulation of life hassles, and environmental pressures such as urban overcrowding or job workloads are conditions commonly found to exceed the response capacity of some individuals. They may induce a variety of biologic changes that are strongly associated with an assortment of dysfunctions that can in turn become sources of stress themselves.[16] Basic health promotion such as good nutrition, exercise, and various approaches to relaxation, can produce short- if not long-term relief from stress.[18]

Psychopharmacologic interventions have proven to be highly effective in the treatment of mental disorders and are in widespread use. Psychotherapeutic agents accounted for one-quarter of all outpatient prescriptions in 1984. There is growing evidence, however, that the effectiveness of pharmacologic interventions is enhanced by psychosocial interventions that are specifically designed and empirically tested.[23]

Psychosocial interventions can also improve psychologic well-being during stressful life conditions through the moderating effects of social supports and strengthening the individual's interpersonal, psychologic, and physical resources.[16] Clinical modalities range from a variety of individual resource-building techniques to psychologic therapies and social interventions.[18] Successful mechanisms for the reduction of excessively demanding environmental conditions include enhanced family support systems, changes in the educational system, job redesign, and changes in the organization and culture of work as well as selected cultural and policy changes that affect chronic and multiple stresses that impinge on both children and adults.[1]

While programs to improve developmental outcomes and reduce the effects of stressful life conditions and experiences can lead to improvements in mental well-being, an increased emphasis on primary prevention research is needed to better establish causal relationships as well as effectiveness of interventions.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

6.1* **Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)**

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
6.1a	**Youth aged 15-19**	**10.3**	**8.2**	
6.1b	**Men aged 20-34**	**25.2**	**21.4**	
6.1c	**White men aged 65 and older**	**46.1**	**39.2**	
6.1d	**American Indian/Alaska Native men in Reservation States**	**15**	**12.8**	

Baseline data sources: National Vital Statistics System, CDC; Indian Health Service Administrative Statistics, IHS.

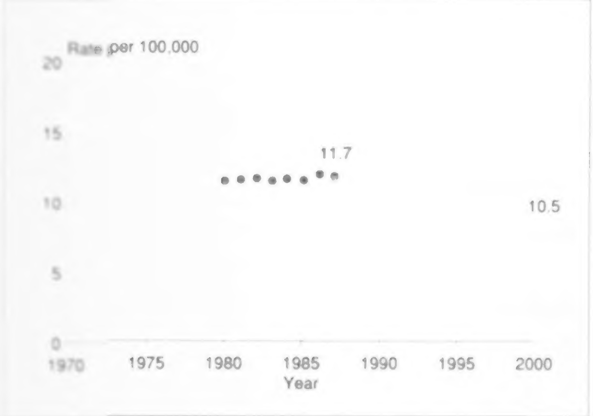

Fig. 6.1

Age-adjusted suicide rate

Suicide is the eighth leading cause of death in the United States and a serious potential outcome of mental illness and mental disorders. In 1987, 30,783 people died of suicide.[illegible] Mental disorders such as various forms of depression, schizophrenia, panic disorder, and adjustment and stress reactions as well as alcohol and other drug abuse have been implicated in both attempted and completed suicides. For young males, in particular, antisocial personality disorder is also frequently associated with suicidal behavior.

Data from "psychologic autopsies" of completed suicides highlight previous suicide attempts, inadequate treatment, medical illness, precipitous life events, family history of suicide or psychiatric disorders, exposure to suicidal behavior, family violence, and availability of firearms in the home as contributing factors. Stressful life circumstances such as separation or divorce, unemployment, or limited socioeconomic resources can also contribute to suicidal behavior.[27] The most promising current approach to suicide prevention appears to be the early identification and treatment of individuals suffering from mental disorders. Continued research is needed to determine the efficacy of specific treatments as they are applied to specific disorders.

Injuries resulting from gunshots cause a majority of suicidal deaths, and much of the increase in suicide rates since the 1950s can be accounted for by firearm-related deaths.[11,35] Attempted suicides are different, with a predominance of poisoning by pill ingestion and minor lacerations. To determine whether interventions designed to prevent mental illness and promote mental health actually reduce intentional suicide deaths, however, requires consideration of the confounding effects of differential availability, accessibility, and acceptability of lethal weapons as well as community variations in the ownership of guns.[17,29,59]

Other confounding conditions include changes in rates associated with the period in which the suicide takes place or when the individual was born. For example, periods of high unemployment are characterized by high suicide rates; when a high proportion of the population are adolescents, adolescent suicide rates are higher. Cohorts of American males entering adolescence between 1950 and 1980 differed in that each successive cohort went through late adolescence with a higher suicide rate than the preceding cohort, a disparity that continued to age 35.[13]

The overall suicide rate has changed relatively little since 1950. However, the rates vary substantially by gender, age, and race/ethnicity. Men are more likely to commit suicide, with rates generally higher for whites and Reservation Indians. Elderly white men (65 years of age and older) and young, male Reservation Indians are particularly susceptible.[13] Although the rate for male adolescents is comparatively low, there has been a steady increase in suicide among all youth aged 15 to 19 since the 1950s. By 1986, suicide was the second leading cause of death in the 15- to 19-year-old group. Suicide rates among men (but not women) aged 20 through 34 increased dramatically in the last three decades and remained relatively high in the 1980s.[13,35] Special goals have been set for these populations at unusual risk.

* This objective also appears as Objective 7.2 in *Violent and Abusive Behavior.*

6.2* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

Attempted suicide is at once a morbid, potentially lethal, health event, a risk factor for future completed suicide, and a potential indicator of other health problems such as substance abuse, depression, or adjustment and stress reactions.[2] Although much has been written about the increasing rates of youth suicide in the United States, little is known about patterns and trends in the occurrence of suicide attempts among the young. In several surveys of adolescents in the general populations, as many as 10 percent of the respondents report having attempted suicide at least once.[17,53] However, only a small proportion of those who report having attempted suicide also report having actually required medical attention for their injuries. As a group, suicide attempters with serious medical injuries are at higher risk of repeated suicide attempts and completed suicide than are suicide attempters with minor injuries.[34,50] This objective focuses on that part of the spectrum of suicidal behavior among high school students which results in injuries to the victim. The Centers for Disease Control will initiate a system of youth risk behaviors that will establish baseline data and begin tracking this objective beginning in 1991.

* This objective also appears as Objective 7.8 in *Violent and Abusive Behavior.*

6.3 Reduce to less than 10 percent the prevalence of mental disorders among children and adolescents. (Baseline: An estimated 12 percent among youth younger than age 18 in 1989)

Baseline data sources: Institute of Medicine; Office of Technology Assessment.

Although an estimated 7.5 million or 12 percent of the Nation's children and adolescents suffer from mental disorders severe enough to warrant treatment, less than one out of eight receives this needed treatment.[42] Included among these disorders are autism, attention deficit and hyperactivity, severe conduct disorders, depression, and alcohol and other drug abuse. More treatment services are needed to reduce the prevalence of these disorders, and more health, education, social, and prevention services are needed to reduce their incidence.

Early diagnosis and effective treatment of those afflicted with these childhood disorders can reduce their duration and recurrence, thus reducing prevalence rates. In addition, as the children's functioning improves, they can be expected to improve their educational, emotional, and psychosocial status, thus decreasing the risk of further deterioration.

A growing segment of children and youth are at exceptionally high risk for psychopathology.[52] More than 20 percent of American children live in poverty, and more than half of these children live in single-parent homes; increasing numbers of children have no home at all. More that 1.5 million children are reported abused and neglected each year. Almost 300,000 children are in foster care, many in up to 30 homes during their childhood years, and approximately 7 million children live with an alcoholic parent. Numerous other risk factors exist. Inadequate prenatal care increases the risk of low birthweight. Low birthweight, combined with poverty and family disorganization, increases the risk of neurologic and psychologic disorders. Babies born to mothers infected with the human immunodeficiency virus or abusing alcohol and other drugs are at vastly increased risk. While a child with only one of these risk factors may develop without problems, each additional factor increases the likelihood of a mental disorder that interferes with the normal developmental process and functioning. Therefore, to achieve a major reduction in the prevalence of mental disorders in children, it is necessary to reduce the factors that put them at risk, to enhance protective factors such as social competency, and to increase the availability of treatment services for those who already have a disorder.

Several programs are effective in preventing social, emotional, and academic difficulties,[9,48,61] including family support programs, parent-infant education programs, early childhood education, school-based social competence promotion, and other social learning programs. Current research is examining whether such intervention programs do, in fact, reduce the incidence of clinically defined mental disorders among the children served.

The lack of knowledge about some childhood disorders such as autism results in few specific preventive efforts. Such, however, is not the case with conduct disorders. About half of all children and adolescents with mental disorders are classified as having severe and persistent conduct disorders. Typically these disorders involve a persistent pattern of behavior in which social rules and the rights of others are violated at a high rate. They include aggression and cruelty in the younger years and delinquent and criminal behavior in adolescence. About half of all children so identified in clinical populations become antisocial adults.[49]

Conduct disorders occur twice as often among males and among children in families where there is marital discord and/or poor parental supervision. The risk is nearly three times as high among children with chronic illness, those with learning disorders, and those who have poor peer relations. Rates are higher among blacks than whites and lower among Asian children than white children; these differences are probably due primarily to socioeconomic factors. Those with more than three of these risk factors are at extraordinary risk for conduct disordered behavior.

A reduction in the rate of conduct disorders (or other mental disorders) will not be achieved by programs designed to alter a single risk factor.[44,47,56] Preventive interventions must address a number of risk factors over an extended period of time, and they must be ongoing and intensive. Several such efforts are underway, and it is likely that such programs can be implemented on a wider scale in the coming decade.

To reduce the incidence and prevalence of childhood mental disorders, including conduct disorders, it will be necessary to achieve many of the other Year 2000 Health Objectives, specifically:

- A reduction in the number of low birthweight and other infants born with neurologic or other physical disorders (see *Maternal and Infant Health*).
- A reduction in the number of children with chronic untreated medical illnesses (see *Maternal and Infant Health, Diabetes and Chronic Disabling Conditions*, and *HIV Infection*).
- An increase in the number of such children who receive special health, education, and social services (see *Diabetes and Chronic Disabling Conditions*).
- A reduction in motor vehicle crashes and other injuries that result in head trauma (see *Unintentional Injuries* and *Violent and Abusive Behavior*).
- An increase in the quality and quantity of educational programs aimed at reducing rates of educational retardation (see *Educational and Community-Based Programs*).
- Interventions that provide economic, educational and social support and guidance for children in high-risk groups, which includes homeless children; those who have lost a parent through death, divorce, or incarceration; and those with older siblings with delinquency records (see *Educational and Community-Based Programs* and *Diabetes and Chronic Disabling Conditions*).
- Reductions in rates of alcohol and other drug abuse among parents and older siblings of all children (see *Alcohol and Other Drugs*).

Secondary prevention of these childhood disorders will be achieved through improvements in diagnosis and treatment. Early treatment and the resulting improvement can alter the trajectory of young children before maladaptive behaviors put them on a course that results in adult psychopathology.

6.4 Reduce the prevalence of mental disorders (exclusive of substance abuse) among adults living in the community to less than 10.7 percent. (Baseline: One-month point prevalence of 12.6 percent in 1984)

Baseline data source: Epidemiologic Catchment Area Survey, ADAMHA.

Mental disorders include a variety of conditions that interfere seriously with people's interpersonal relationships as well as with their productivity and life course. These disorders include the continuum of cognitive, emotional, and behavioral disorders that seriously interfere with people's lives and productivity at school, at work, and in interpersonal relationships. This continuum includes schizophrenia, depression, anxiety, phobias, panic attacks, and more.[60] Although the psychobiologic factors that lead to the development and maintenance of these disorders have not yet been fully identified, primary prevention, early identification, and appropriate application of available treatment, support, and rehabilitation technology can reduce the likelihood of progressive disability.

The severely and persistently mentally ill in the community are a vulnerable population group. They are largely adults suffering from recurring and persistent schizophrenia. Most have experienced extended periods of institutionalization or repeated short-term hospitalizations, but all have suffered an erosion of their capacities and potential in basic aspects of daily life ranging from economic self-sufficiency to personal care and interpersonal relationships. The immediate issue for many of the persistently and severely disordered is the disabling instability that an insufficient income, no housing, inappropriate social support, or irregular medication can bring into their lives. Homelessness and removal from the community through rehospitalization are indicators of this level of disability, which is susceptible to reduction through special community programs.[37]

Depressive disorders affect some 10 million Americans, often in their most productive years—between 25 and 44. These disorders are more than a case of the "blues." Major depression is characterized by a prolonged and unrelenting sad mood, loss of interest in virtually all activities, changes in eating and sleeping patterns, and sometimes suicidal thoughts. Included in this group are bipolar disorder, which is characterized by severe mood swings, and dysthymia, a long-lasting disorder with fewer and less incapacitating symptoms than major depression. Despite the effectiveness of drug and psychotherapeutic interventions, an estimated 21 percent of those who experience major depressive disorders are not seen in any service settings, and as many as 56 percent are seen by their physicians without receiving mental health services. Even the 19 percent receiving mental health services from mental health providers or physicians may not always be appropriately served. A large, multisite study found that more than half the patients, including those with severe, protracted depression, had been treated earlier with anxiety-reducing drugs instead of antidepressants, with only about 1 in 10 of those who had been given antidepressants receiving adequate doses. The issue is clearly one of appropriate as well as early intervention.[47] Anxiety disorders, the most common of the major mental disorders, affect 7.3 percent of the population in any given month.[45] These disorders range from fairly circumscribed phobias, such as a fear of snakes, to global, highly incapacitating disorders, such as agoraphobia, panic disorder, and obsessive compulsive disorder. Fortunately, highly effective treatments have been developed, including behavioral, cognitive, and pharmacologic approaches. This makes early diagnosis and treatment of significant importance in reducing impairment. However, as with depressive disorders, persons with anxiety disorders often do not seek or receive appropriate treatment, which is an obstacle to prevalence reduction efforts.

A 10-percent reduction in the prevalence of major functional mental disorders among adults living in the community depends on increasing public and professional awareness of symptoms and appropriate treatments, overcoming the stigma of seeking care, and increasing access to treatment, support, and rehabilitation services.

6.5 Reduce to less than 35 percent the proportion of people aged 18 and older who experienced adverse health effects from stress within the past year. (Baseline: 42.6 percent in 1985)

Special Population Target

	1985 Baseline	2000 Target	Percent Decrease
6.5a People with disabilities	**53.5%**	**40%**	

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

Baseline data source: National Health Interview Survey, CDC.

The effects of stress are most commonly described as nervousness, tension, anger, irritation, depression, anxiety, and an inability to cope, as well as physical symptoms that include headache, muscle ache or tension, stomach ache or tension, and fatigue. It has been suggested that the effects of stress are related to a variety of clinically defined illnesses such as anxiety, eating disorders, depression, gastrointestinal and cardiovascular illnesses, and immune disorders, as well as suicide and other forms of aggression, substance abuse, and intentional and unintentional injuries.

Reports from both the medical and work sectors confirm the pervasiveness of perceived stress-related disability that emerges in epidemiologic self-report data. A 1980 study of patient needs in primary care centers found that the most common health care requests involved psychologic problems.[19] Worker compensation data confirm the magnitude of occupational stress problems in the United states, with an increase in claims for psychologic disorders reported as a result of job experiences during the 1970s.[33] The economically disadvantaged—low income, poorly educated, nonprofessional—and women seem to be at higher risk for both psychosocial and psychophysiologic stress reactions, with the unemployed and part-time employed, minorities, single parents, and adults under 30 also at higher risk for psychosocial distress. The older adults, older singles without children, those living alone, and those in poor general health or recently hospitalized are also at higher risk for psychophysiologic distress.[32]

A reduction of 18 percent in the prevalence of stress-related impairment is proposed through expansion of site-specific and population-specific interventions to improve people's ability to prevent, reduce, or manage stress.

Risk Reduction Objectives

6.6 Increase to at least 30 percent the proportion of people aged 18 and older with severe, persistent mental disorders who use community support programs. (Baseline: 15 percent in 1986)

Baseline data source: National Institute of Mental Health Community Support Program Client Follow-Up Study, ADAMHA.

Enhancing and stabilizing living conditions is often the most basic issue in controlling the disabling effects of severe, persistent mental disorders. Social support can be effective in decreasing symptomatic behavior and increasing the individual's coping skills.[10,36] There is growing evidence that even those with the most severe and persistent mental disorders can recover, change behaviors, improve functioning, and learn to manage their symptoms.[6] Positive expectations expressed through community support programs profoundly affect self-esteem, progress, and growth, while limited expectations tend to foster negative behaviors and invite failure.[20,54]

For a variety of reasons that include a lack of financial resources, trained staff, coordinated service delivery systems, and knowledge of community-based approaches, most communities are not providing appropriate services to the 2.8 million adults believed to have severe, disabling mental illness.

6.7 Increase to at least 45 percent the proportion of people with major depressive disorders who obtain treatment. (Baseline: 31 percent in 1982)

Baseline data source: Epidemiologic Catchment Area Study, ADAMHA.

Of the total population suffering from a major depressive disorder in any 6-month period, only 31 percent actually receive treatment of any kind, and too often that treatment is inappropriate. Yet, properly implemented psychologic and pharmacologic treatments have been found effective more than 8 times out of 10. A variety of beliefs and concerns hamper help-seeking behaviors. Failure to recognize depressive disorders both by the person suffering depressive symptoms and by the physicians poses significant barriers. Economic access to treatment providers and appropriateness of treatment, whether by a medical care provider or by a mental health provider, can also be problematic. Achievement of this objective will depend on the successful transfer of available knowledge to those who suffer from major depressive disorders as well as to primary health care providers, mental health professionals, and others in the helping professions.[46]

6.8 Increase to at least 20 percent the proportion of people aged 18 and older who seek help in coping with personal and emotional problems. (Baseline: 11.1 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*	*Percent Increase*
6.8a	**People with disabilities**	**14.7%**	**30%**	

Baseline data source: National Health Interview Survey, CDC.

Most of the adult population reports experiencing personal or emotional problems in the course of a year. Half of these people say that they are unable to solve their problems, and approximately one-third report that they are unable to do anything to make their problems more bearable. Yet relatively few seek help, in part because they believe it better to handle problems alone, in part because helping resources are unknown, unaffordable, untimely, or believed to be inadequate to the problems. Those who do turn to others for support more often than not seek out family members and friends. The help sought is usually comfort, reassurance, and advice. Professional welfare or service organizations are usually contacted when assistance is not available within the network of family or friends or the emotional upset is particularly intense. Mental health professionals, physicians, and religious counselors are the most likely choices of those who seek professional help.

Given a high level of role strain, the activity level, intimacy, and dependability of the individual's social network have been found to reduce the level of distress. In addition, the dependability of one's network, more than its activity level or intimacy, buffers the effects of high levels of role strain on the individual. This buffering effect seems to be specific to situations in which emergency help, economic strain, or occupational problems are at issue, rather than parental or marital problems. However, positive attitudinal or behavioral change may result from various professional interventions around parental problems and marital discord, though studies of these effects often are flawed by lack of random assignment and sample attrition. Evaluations of mutual help groups further suggest that a confiding relationship with a spouse, a confidant outside of marriage, or membership in a mutual help group can be effective buffers.[30]

6.9 Decrease to no more than 5 percent the proportion of people aged 18 and older who report experiencing significant levels of stress who do not take steps to reduce or control their stress. (Baseline: 21 percent in 1985)

Baseline data source: Prevention Index, Rodale Press, Inc.

Most adult Americans report having a great deal of stress in their lives. More than a fourth of those who acknowledge a great deal of stress say they do not consciously take steps to control or reduce it. Among those who do take steps, emotional denial, physical exercise, and stress avoidance are the most popular measures.[55] Yet the stress management literature describes an array of formal interventions, including relaxation, biofeedback, meditation, desensitization, development of coping responses, assertiveness training, imagery, diet, exercise, and weight control. A service industry is evolving, although the efficacy of most of the techniques has not yet been rigorously evaluated using physiologic measures, appropriate control groups, and random assignment procedures.

Continual improvements in research methodology may permit more reliable identification of the sources of stress and the processes that mediate the transformation of stressful events into health and mental health problems, as well as evaluation of stress management and stress reduction techniques. As the results of these efforts are made available to primary care providers as well as to the public at large, the utility of stress management and stress reduction in general should become more apparent and the selection of techniques more informed and better differentiated. If the results of these efforts demonstrate the utility of stress management and stress reduction, then dissemination should be undertaken.

Services and Protection Objectives

6.10* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

Recent developments in screening techniques designed for use within correctional settings should aid in the detection of both suicidal and mentally ill arrestees.[22] However, only 36 of the 50 states currently have either voluntary or mandatory jail standards regarding suicide; only 8 State jail standards specify suicidal behavior inquiry in their intake screening; fewer than 12 State jail standards have specific policies and procedures regarding suicide prevention; only 6 standards specify suicide prevention training in their staff training curriculum; and only 2 States specify continuous observation for certain groups of suicidal inmates. Although the courts mandate that jails conduct routine mental health evaluations, many do not comply. Moreover, although the courts have stipulated that mentally ill prisoners must receive treatment for mental disorders, many, particularly those in rural areas, have no mental health liaison.[3,4,5,40]

Suicide is the leading cause of death in American jails. The suicide rate among inmates in county jails and police lockups is 16 times greater than that for individuals in the total population, and the size of the national jail population has been growing rapidly. Two types of jails are of primary concern: holding facilities, which normally detain persons for less than 48 hours, and detention facilities, which normally detain persons for more than 48 hours but less than 2 years.[41] The most common demographic profile of an inmate suicide victim is an unmarried white male in young adulthood. About three-quarters of the victims are arrested for nonviolent offenses, with 27 percent being detained on alcohol- or other drug-related charges. More than half of the victims are intoxicated at the time of incarceration. In 94 percent of the suicides, the method is by hanging; 48 percent of the victims use bedding to hang themselves. Two-thirds of victims are in isolation at the time of their suicide. High-risk periods include the time immediately upon admission to a facility; after adjudication, when the inmate is returned to a facility from court; following the receipt of bad news regarding self or family; and after suffering some type of humiliation or rejection. Severe depression is also a significant risk factor.[21] An epidemiologic survey of urban jail detainees in Cook County, Illinois, found the rate of psychotic disorders among incoming jail detainees to be two to three times the rate in the community population, with some indication that mentally ill persons with co-occurring substance abuse and personality disorders may be the most vulnerable to arrest because few treatment alternatives are available.[56]

The National Center on Institutions and Alternatives has developed the Training Curriculum on Suicide Detection and Prevention in Jails and Lockups. Several key elements of effective suicide prevention in jails are emphasized. First, intake screening must be performed on every arrestee immediately upon entry into the jail facility to assess suicide potential and triage arrestees based on this assessment. Second, continued observation and awareness of suicidal potential during the initial period of incarceration is essential. Third, the use of isolation enhances the chance of suicide and it should, therefore, be prohibited. Finally, physical modifications in the jail environment such as barless windows and doors, tearaway blankets, and television monitors may be useful in preventing suicide but should not be substituted for human interaction.

The National Institute for Correctional Alternatives will provide the data to establish a baseline and track this objective.

* This objective also appears as Objective 7.18 in *Violent and Abusive Behavior*.

6.11 Increase to at least 40 percent the proportion of worksites employing 50 or more people that provide programs to reduce employee stress. (Baseline: 26.6 percent in 1985)

Baseline data source: National Survey of Worksite Health Promotion Activities, ODPHP.

Worksite programs can be important in reducing stress-related disorders. Two specific actions are proposed to advance this objective: (1) identify key risk factors for occupational stress for the most populous occupations and (2) conduct and evaluate job redesign and organizational changes that will reduce stress in major occupations.[16]

Although important risk factors for occupational stress already have been identified, the populations at risk have not been carefully delineated. Clear identification of populations of workers affected by these risk factors will improve targeting of prevention measures such as job redesign. The first action requires acceleration of large-scale occupational studies linking working conditions with stress and health. As promising job redesign and organizational change methods for reducing stress are identified and incentives provided for more widespread intervention, industry will be further motivated to conduct controlled intervention studies. Responsibility for implementation lies with industry and industry associations, though worker representatives/labor groups should be involved in the design and implementation of worksite stress reduction programs.

6.12 Establish mutual help clearinghouses in at least 25 States. (Baseline: 9 States in 1989)

Baseline data source: National Council on Self-Help and Public Health.

During the past decade, autonomous mutual help groups have gained increasing recognition as complementary to clinical practice. Often referred to as self-help organizations, their members include people who share or have shared specific physical, mental, or emotional problems. These groups make significant contributions to positive outcomes for persons affected by mental and behavioral disorders, including the family members and formal and informal caregivers of individuals with chronic conditions. An estimated 10 million to 15 million people are members of mutual help groups in the United States, with some 1.9 million adults turning to nonprofessional mutual help resources for personal or emotional problems in the course of a year.[32]

One of the priority recommendations of the Surgeon General's Workshop on Self-Help and Public Health was to establish and strengthen mutual help clearinghouses as a means of expanding this effort. Existing mutual help clearinghouses cover geographic areas that include about 53 percent of the population. They provide information about and referral to thousands of groups and help thousands of people find supportive groups. In addition, they serve an important liaison function between mutual help groups and the mental health and health communities.

6.13 Increase to at least 50 percent the proportion of primary care providers who routinely review with patients their patients' cognitive, emotional, and behavioral functioning and the resources available to deal with any problems that are identified. (Baseline data available in 1992)

Between one-half and two-thirds of people who commit suicide visit a physician less than one month before the incident.[8,50] Depression is one of the most common problems seen by primary care physicians, occurring in up to 30 percent of patients.[26] Symptoms of depression, anxiety, and other mental disorders often are not recognized in primary care settings and may go untreated or inappropriately treated. Many people are treated for physical symptoms, such as sleep and appetite problems, headaches, fatigue, and a variety of other unexplained somatic complaints that are often due to undiagnosed depression. Many of those whose depressive disorder is recognized do not receive proper treatment. These situations occur for many reasons including inadequate knowledge about the symptoms of depressive disorders and the availability of effective and appropriate pharmacologic and psychologic treatments, insufficient time spent with patients, lack of medical coverage for mental illness, and the stigma attached to mental illness that keeps physicians from recognizing the illness, or, if recognized, from telling the patient the true diagnosis.

Primary health care providers are urged to be alert to signs of mental and emotional disorders in their patients, giving particular attention to those going through major life transitions such as a recent divorce, separation, bereavement, unemployment, or serious medical illness. Comorbidity of emotional disorders and alcohol and other drug use should also be considered. [8]

Accomplishing this objective will require stronger emphasis on cognitive, emotional, and behavioral disorders as well as on stress pathogenesis as part of health provider education. Despite the fact that stress has been associated with a variety of medical, psychologic, and occupational health complaints, only one American medical school currently requires a stress course as a part of its curriculum.[38] The Office of Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1992.

6.14 Increase to at least 75 percent the proportion of providers of primary care for children who include assessment of cognitive, emotional, and parent-child functioning, with appropriate counseling, referral, and followup, in their clinical practices. (Baseline data available in 1992)

Developmental and behavioral assessment is recommended by the American Academy of Pediatrics as a component of well-child care. Although the long-term effectiveness of such screening as currently practiced has not been demonstrated, programs offering early intervention have had encouraging results and small positive effects have been reported for augmented behavioral counseling.[43] Screening without followup is not likely to be effective; therefore this objective addresses not just assessment but referral and followup services as well. The Office of Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1992.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve these mental health objectives include the following:

- Establish the number of mental health professionals who are needed to accomplish the practice, educational, and research aspects of the objectives, and establish the appropriate levels of mental health training appropriate for auxiliary professions, such as medical, social service, child development, and educational professions.
- Provide curricular content on mental health and mental disorders in all schools and programs preparing students for careers in mental health, medicine, nursing, social work, child development, and education and ensure that all graduates of such schools and programs can demonstrate knowledge of relevant subjects.
- Increase the provision of continuing education on mental health by national professional associations whose members have roles in helping individuals, families, and communities in improving mental, emotional, and cognitive strengths and in preventing and identifying mental illnesses.
- Increase the number of faculty development programs and fellowships in the field of mental health.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objective 6.1.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, and 6.12.

New Surveillance systems are needed to track Objectives 6.13 and 6.14.

High Priority Needs

Epidemiologic studies conducted in the past 10 years have demonstrated that valid and reliable estimates of the prevalence of major mental disorders in selected communities can be obtained. Currently, estimates needed for surveillance purposes are not routinely available because relevant information is usually not collected in ongoing surveys of national samples. To monitor progress toward achievement of these objectives, the following estimates are needed:

- The national 1-month prevalence of schizophrenia, affective or mood disorder, and paranoid states, their severity and persistence/reoccurrence, services sought, and services provided.
- The national 1-month prevalence of incapacity or impairment associated with recent objectively and subjectively stressful experiences and the extent to which stress management or stress reduction techniques are employed.
- The national 1-month prevalence of mental disorders, including stress-related conditions, diagnosed by primary health care providers.
- The proportion of pediatric health care providers who include assessment of cognitive, emotional, and parent-child functioning and follow-through as part of their clinical practice.

Research Needs

Research is needed in the field of mental health to determine the following:

- The genetic, neurobiologic, biochemical, and physiologic/molecular contributors to mental health and mental disorders. Social and environmental contributors to mental health and mental disorders.
- Appropriate biomedical and psychosocial interventions that are effective in the diagnosis, treatment, and management of mental disorders.
- The specific biologic mechanisms by which stressful environmental conditions affect mental and physical health, together with pharmacologic, somatic, and physical interventions to prevent or lessen mental and physical effects.
- The barriers to prevention and early identification of cognitive, emotional, and behavioral disorders, including social stigma associated with use of mental health services and care.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.3 Regular moderate physical activity
1.5 Sedentary lifestyle
1.7 Weight loss practices activity
1.11 Community fitness facilities

Nutrition

2.3 Overweight
2.4 Growth retardation
2.10 Iron deficiency

Alcohol and Other Drugs

4.3 Drug-related deaths
4.4 Drug abuse-related emergency room visits
4.6 Use by young people
4.8 Alcohol consumption
4.9 Perception of social disapproval by high school seniors
4.10 Perception of harm by high school seniors
4.11 Anabolic steroid use
4.12 Access to treatment programs
4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Violent and Abusive Behavior

7.1 Homicide
7.3 Firearm injury deaths
7.4 Child abuse and neglect
7.5 Partner abuse
7.6 Assault injuries
7.7 Rape and attempted rape
7.9 Physical fighting among youth
7.10 Weapon-carrying by youth
7.11 Inappropriate storage of weapons
7.12 Emergency room protocols
7.14 Evaluation and followup of abused children
7.15 Shelter space for battered women
7.16 Conflict resolution education in schools
7.17 Comprehensive violence prevention programs

Educational and Community-Based Programs

8.2 Completion of high school
8.3 Preschool child development programs
8.6 Worksite health promotion activities
8.10 Community health promotion programs

Unintentional Injuries

9.8 Nonfatal poisoning

Occupational Safety and Health

10.12 Worksite health and safety programs

Diabetes and Chronic Disabling Conditions

17.15 Clinician assessment of child development
17.20 Service systems for children with or at risk of chronic and disabling conditions

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.3 Comparable data collection procedures

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Violent and Abusive Behavior

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7. Violent and Abusive Behavior

Introduction

Violent and abusive behavior exacts a large toll on the physical and mental health of Americans. Child abuse, spouse abuse, and other forms of intrafamilial violence continue to threaten the health of thousands of American families. At least 2.2 million people are victims of violent injury each year. The United States ranks first among industrialized nations in violent death rates, and deaths caused by violent and unintentional misuse of firearms exceed in number the combined total of the next 17 nations. Taken together, suicide and homicide constitute the fourth leading cause of years of potential life lost to people prior to age 65 in the United States. Suicide is the third leading cause of death among people aged 15 through 24, and homicide is the leading cause of death for blacks aged 15 through 34.

Violent and abusive behaviors are an important cause of injury-related death and long-term disability. In fact, homicide and suicide account for over one-third of the more than 145,000 injury deaths that occur in the United States each year. It appears that violence has become the response of first recourse in many cases of emotional and mental distress and interpersonal conflict, as well as a tool of premeditated criminal acts. Consequently, the objectives and needs outlined in this chapter, taken in conjunction with those in the chapter on Unintentional Injuries, provide a foundation for injury prevention and control efforts over the coming decade.

For these reasons, an area that historically has been the responsibility of the fields of law enforcement, social services, and mental health has become a national public health priority. During 1985, the Surgeon General and the U.S. Public Health Service provided a national focus on violence as a leading public health problem in the United States. Since that time, public health perspectives in preventing death and disability due to violent and abusive behavior have emerged across the country.

Although much remains unknown about effective means of reducing violent and abusive behavior, important steps can be taken now. The objectives for this public health problem have been developed within six key areas: homicide and assaultive violence, domestic violence, child abuse, sexual assault, suicide, and firearm injury.

Several cross-cutting needs must be emphasized. First, cooperation and integration across public health, health care, mental health, criminal justice, social service, education, and other relevant sectors are essential in developing effective prevention strategies. Numerous factors underlie the forms of violent and abusive behavior addressed in these objectives. Health programs alone cannot deal with these factors. In the formulation of prevention strategies, many major aspects of the American social structure are involved and must be considered — the family, the community, the educational system, and the economic structure.

Second, the availability and quality of data on morbidity and disability associated with violence are uniformly poor, particularly at the local level where prevention programs typically are implemented. These shortcomings in data must be addressed if we are to monitor and evaluate progress in this priority area.

Third, effective services for victims that address the physical and psychosocial consequences of violent and abusive behavior must be identified, strengthened, and expanded. The psychosocial consequences of assaultive violence and suicidal behavior for victims as well as family members often extend far beyond the physical injuries.

Fourth, alcohol and other drug intoxication, abuse, and dependence are consistently found to be associated with suicidal behavior and interpersonal violence. Therefore, efforts to prevent the problems of alcohol and illicit drug use should be incorporated into violence prevention policies.

Fifth, there is a tremendous need for professional education and awareness in identifying and treating victims of violence. For example, physicians are often uninformed as to risk factors in their patients for suicidal behavior, spouse abuse, and other forms of violence.

Finally, cultural differences in values and behavioral norms across the many ethnic and racial groups in the United States must be a paramount consideration in formulating and implementing prevention programs for violent and abusive behavior.

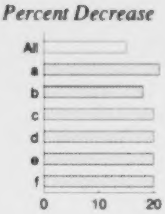
Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

7.1 Reduce homicides to no more than 7.2 per 100,000 people. (Age-adjusted baseline: 8.5 per 100,000 in 1987)

Special Population Targets

	Homicide Rate (per 100,000)	*1987 Baseline*	*2000 Target*
7.1a	**Children aged 3 and younger**	3.9	3.1
7.1b	**Spouses aged 15-34**	1.7	1.4
7.1c	**Black men aged 15-34**	90.5	72.4
7.1d	**Hispanic men aged 15-34**	53.1	42.5
7.1e	**Black women aged 15-34**	20.0	16.0
7.1f	**American Indians/Alaska Natives in Reservation States**	14.1	11.3



Baseline data source: National Vital Statistics System, CDC.

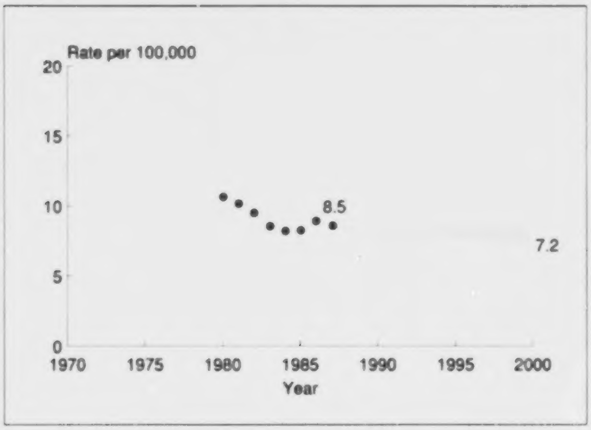


Fig. 7.1

Age-adjusted homicide rate

Homicide is defined here as death due to injuries purposely inflicted by another person, not including deaths caused by law enforcement officers or legal execution. Homicide is the 11th leading cause of death in the United States, accounting for 20,812 deaths in 1987. Men, teenagers, young adults, and minority group members, particularly blacks and Hispanics, are most likely to be murder victims. Most homicides are committed with a firearm, occur during an argument, and occur among people who are acquainted with one another.[15]

Intrafamilial homicide accounts for approximately one out of six homicides, primarily among young adults and blacks. Approximately half of family homicides are committed by spouses. The risk of being killed by one's spouse is 1.3 times higher for wives than for husbands. From 1976 through 1985, spouse homicides declined by more than 45 percent for blacks but remained relatively constant for whites.[46]

Homicides between intimates, regardless of whether the victim is male or female, are often preceded by a history of physical and emotional abuse directed at the woman.[11] When a wife kills a husband it is usually in self-defense. The prevention of homicides among spouses and intimates is directly linked, therefore, to the prevention of abuse of women. Focusing on abuse solely within legally sanctioned marriages, however, will miss abuse that occurs during dating, in nontraditional relationships, and in relationships that have been terminated through separation and divorce.

Among homicide victims under age 4, where the victim and offender relationship is identified, the large majority are killed by a family member or caretaker, whereas older child victims are murdered primarily by acquaintances or strangers.[32]

Child abuse caused an estimated 1,100 deaths in 1986.[73] Half of these resulted from physical abuse and half from neglect. The reported number of child abuse fatalities increased by 23 percent in 1986, an increase that cannot be explained simply as a function of improved reporting systems.[22] More reliable data collection is needed to monitor child abuse deaths among children under age 4.

No cause of death so greatly differentiates black Americans from other Americans as homicide.[72] In 1983, blacks constituted 11.5 percent of the U.S. population but comprised 43 percent of all homicide victims. Death rates from homicide among black men, women, and children far exceed the rates for other citizens of the same age and gender, and homicide is the leading cause of death for blacks aged 15 through 34.[15]

Homicide rates for blacks have declined dramatically since 1970, while white homicide rates have increased.[15] Therefore, while the central focus of public health efforts to prevent homicide should be on facilitating the further decline of black homicide rates, efforts to stem the increasing homicide rate among whites should also be undertaken.

National estimates of the magnitude of Hispanic homicides are currently inadequate. Only the Federal Bureau of Investigation's (FBI) Supplemental Homicide Report System contains Hispanic identifiers; however, information on this identifier is missing for a substantial percentage of the homicide victims reported to the FBI through this system. In 5 Southwestern States (Arizona, California, Colorado, New Mexico, and Texas) between 1977 and 1982 the Hispanic homicide rate was 47 percent of the rate among blacks but almost 3 times the rate of non-Hispanic whites. Hispanic men account for all of the elevated risk faced by Hispanics relative to whites in the Southwest.[61]

Poverty has been identified as an extremely important factor in homicide. This is a critical variable to consider, because if the high incidence of homicide among blacks and other minority groups simply reflects greater poverty, then preventive interventions should be targeted toward all persons living in poverty. Unfortunately, national data sources for homicide do not include socioeconomic information on decedents, making it difficult to monitor progress toward reducing homicide rates in impoverished groups.

Another important factor associated with homicide is the use, manufacture, and distribution of drugs. Violence may occur as a consequence of the pharmacological effects of drugs, of economically motivated crimes to support drug use, or of interactions related to the manufacture, buying, and selling of drugs.[26] No national data sets allow for a determination of the proportion of homicides associated with drug use in these 3 ways. Studies conducted in Miami and New York City, however, indicate that at least 25 percent of the homicides occurring in these cities may be associated with drug use.[25,41]

7.2* **Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)**

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*
7.2a	**Youth aged 15-19**	**10.3**	**8.2**
7.2b	**Men aged 20-34**	**25.2**	**21.4**
7.2c	**White men aged 65 and older**	**46.1**	**39.2**
7.2d	**American Indian/Alaska Native men in Reservation States**	**15**	**12.8**

Baseline data sources: National Vital Statistics System, CDC; Indian Health Service Administrative Statistics, IHS.

Suicide is the eighth leading cause of death in the United States and a serious potential outcome of mental illness and mental disorders. In 1987, 30,783 people died of suicide.[71] Mental disorders such as various forms of depression, schizophrenia, panic disorder, adjustment and and stress reactions as well as alcohol and other drug abuse have been implicated in both attempted and completed suicides. For young males, in particular, antisocial personality disorder is also frequently associated with suicidal behavior.

Data from "psychologic autopsies" of completed suicides highlight previous suicide attempts, inadequate treatment, medical illness, precipitous life events, family history of suicide or psychiatric disorders, exposure to suicidal behavior, family violence, and availability of firearms in the home as contributing factors. Stressful life circumstances such as separation or divorce, unemployment, or limited socioeconomic resources can also contribute to suicidal behavior.[33] The most promising current approach to suicide prevention appears to be the early identification and treatment of individuals suffering from mental disorders. Continued research is needed to determine the efficacy of specific treatments as they are applied to specific disorders.

Injuries resulting from gunshots cause a majority of suicidal deaths, and much of the increase in suicide rates since the 1950s can be accounted for by firearm-related deaths.[10] Attempted suicides are different, with a predominance of poisoning by pill ingestion and minor lacerations. To determine whether interventions designed to prevent mental illness and promote mental health actually reduce intentional suicide deaths, however, requires consideration of the confounding effects of differential availability, accessibility, and acceptability of lethal weapons as well as community variations in the ownership of guns and legislation controlling the sale and purchase of guns.[38,39,75]

Other confounding conditions include changes in rates associated with the period in which the suicide takes place or when the individual was born. For example, periods of high unemployment are characterized by high suicide rates. Similarly, when a high proportion of the population are adolescents, adolescent suicide rates are higher. Cohorts of American males entering adolescence between 1950 and 1980 differed in that each successive cohort went through late adolescence with a higher suicide rate than the preceding cohort, a disparity that continued to age 35. [16]

The overall suicide rate has changed relatively little since 1950. However, the rates vary substantially by gender, age, and race/ethnicity. Men are more likely to commit suicide, with rates generally higher for whites and Reservation Indians. Elderly white men (65 years of age and older) and young, male Reservation Indians are particularly susceptible.[16] Although the rate for male adolescents is comparatively low, there has been a steady increase in suicide among all youth aged 15 through 19 since the 1950s. By 1986, suicide was the second leading cause of death in the 15- to 19-year-old group. Suicide rates among men (but not women) aged 20 through 34 increased dramatically in the last three decades and remained relatively high in the 1980s.[15,47] Special goals have been set for these populations at unusual risk.

* This objective also appears in the *Mental Health and Mental Disorders* priority area as Objective 6.1.

7.3 Reduce weapon-related violent deaths to no more than 12.6 per 100,000 people from major causes. (Age-adjusted baseline: 12.9 per 100,000 by firearms, 1.9 per 100,000 by knives, in 1987)

Baseline data source: National Vital Statistics System, CDC.

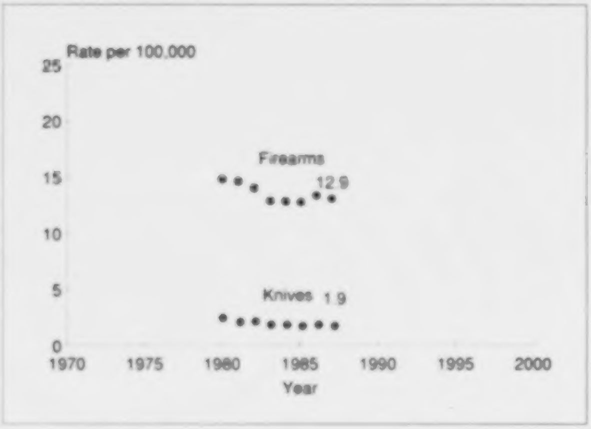


Fig. 7.3

Age-adjusted firearm and knife injury death rates

Violent death can occur as a result of gunshot wounds, knife wounds, poisoning by solids or liquids, deliberate motor vehicle crashes, carbon monoxide poisoning in motor vehicles, arson, drowning, falls, and suffocation or hanging. Among the instruments of violent death, firearms and knives rank far ahead of other means for homicides. Knives are used infrequently in suicidal deaths.[18] Violent and unintentional use of firearms is the second most important contributor, after motor vehicles, to injury deaths.[8] Suicides and homicides account for more than 90 percent of all firearm-related deaths and more than 95 percent of all knife-related deaths. Of the approximately 21,000 homicides that occur in the United States each year, over 60 percent involve firearms and about 20 percent involve knives.[18] In 1985, firearms were the weapons used in 31,566 deaths: 55 percent from suicide, 37 percent from homicide, and 5 percent from unintentionally inflicted injuries; the remainder were due either to legal intervention or the medicolegal cause of death was undetermined.[45] For knives and other cuttings, the total was nearly 5,000 deaths, with only 8 percent from suicide, over 88 percent from homicide, and about 2 percent from unintentional injury.[18] Death rates involving the violent use of firearms with women, teenage boys, and young men as the victims were highest during the 1980s;[75] men between the ages of 15 and 34 are at highest risk of death from suicide and homicide in which guns are the weapon used. Of particular concern are young people. A survey of 8th and 10th grade students found that almost 7 percent of boys and 2 percent of girls carried knives to school nearly every day.[5]

Information from death certificates is insufficient to categorize firearm-deaths by the type of gun involved (e.g., handgun, assault rifle, or shotgun). Such information is needed in order to target research and prevention efforts to those types of guns that pose the greatest hazard relative to their prevalence in the general population.

7.4 Reverse to less than 25.2 per 1,000 children the rising incidence of maltreatment of children younger than age 18. (Baseline: 25.2 per 1,000 in 1986)

Type-Specific Targets

	Incidence of Types of Maltreatment (per 1,000)	*1986 Baseline*	*2000 Target*
7.4a	**Physical abuse**	5.7	<5.7
7.4b	**Sexual abuse**	2.5	<2.5
7.4c	**Emotional abuse**	3.4	<3.4
7.4d	**Neglect**	15.9	<15.9

Baseline data source: Study of the National Incidence of Child Abuse and Neglect, Office of Human Development Services.

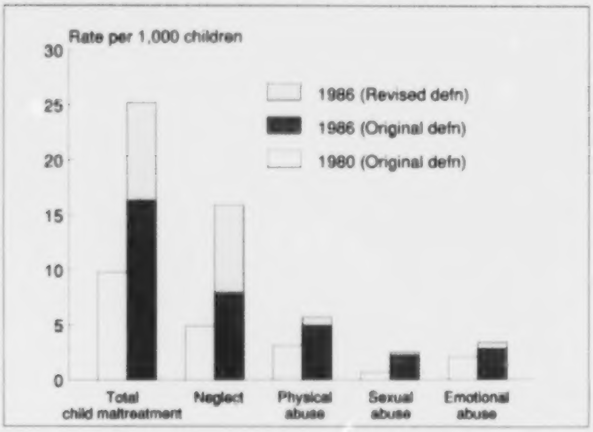


Fig. 7.4

Incidence of child abuse and neglect

The Child Abuse Prevention, Adoption, and Family Services Act of 1988 defines child abuse and neglect as physical or mental injury, sexual abuse or exploitation, negligent treatment, or maltreatment of a child by a person who is responsible for the child's welfare, under circumstances which indicate that the child's health or welfare is harmed or threatened. In 1986, an estimated 1.6 million children nationwide experienced some form of abuse or neglect. Physical abuse accounted for the greatest portion of abuse incidents, followed by emotional and then sexual abuse. Educational neglect was the most frequent category of neglect, followed by physical and then emotional neglect. When compared to 1980 data, increases had occurred in all forms of child abuse and physical and educational neglect. Only moderately severe injuries associated with child abuse were found to decrease.[73]

The targets for this set of objectives are stated as reversing increasing trends rather than achieving specific reductions because of the difficulties in obtaining valid and reliable measurement of child maltreatment. National data are based on incidents that come to the attention of child protection agencies, other investigatory agencies, or professionals in schools, hospitals, or other health or social service agencies. Reported increases may, in fact, reflect greater public awareness and the improved ability of professionals to recognize maltreatment than actual increases in occurrence of maltreatment.

7.5 Reduce physical abuse directed at women by male partners to no more than 27 per 1,000 couples. (Baseline: 30 per 1,000 in 1985)

Baseline data source: National Family Violence Survey, ADAMHA.

Studies suggest that between 2 million and 4 million women are physically battered each year by partners including husbands, former husbands, boyfriends, and lovers.[70] Approximately half of these women are single, separated, or divorced. Between 21 and 30 percent of all women in this country have been beaten by a partner at least once.[66]

Women are more often assaulted and raped by a male partner than by a stranger. In addition, women are often battered by their partners during pregnancy. Although male partners are also abused, women appear to be at greater risk of injury from abuse and are likely to attack their partners in self-defense.[57] Once physical violence has occurred in a relationship, it tends to recur and become more severe over time. More than 1 million women seek medical assistance for injuries caused by battering each year, and the vast majority of domestic homicides are preceded by episodes of violence.[64,68]

Domestic violence is a major context for suicide attempts, substance abuse, and mental illness among women and 45 percent of the mothers of abused children are themselves battered women. Programs aimed at prevention of and intervention in partner abuse can also contribute to prevention in these areas and can provide a framework to ensure optimal safety and advocacy for both mother and child.[63,65]

The baseline rate for this objective is an estimate of severe violence, defined as acts that have a relatively high probability of causing an injury. Such acts include kicking, biting, punching, hitting with an object, beating up, threatening with a knife or gun, or using a knife or gun. Efforts to measure partner abuse are limited by what people are willing to reveal to interviewers as well as by inadequate techniques for measuring violent behavior. Improved methods for routinely collecting information on partner abuse and other forms of domestic violence are needed.

7.6 Reduce assault injuries among people aged 12 and older to no more than 10 per 1,000 people. (Baseline: 11.1 per 1,000 in 1986)

Baseline data source: National Crime Survey, U.S. Department of Justice.

An assault injury is defined as any physical or bodily harm occurring during the course of a rape, robbery, or any other type of attack upon a person. Each year between 1979 and 1986 more than 2.2 million people suffered nonfatal injuries from violent and abusive behavior. Of these injured victims, 1 million received medical care and 500,000 were treated by emergency medical facilities.[29] Even these figures, however, underestimate the true extent of nonfatal assaultive injury in the United States.

An estimated 28 percent of violent crime victims suffered injuries; more than 13 percent had injuries serious enough to require medical attention; for 7 percent the injury was serious enough to require hospital care and for 1 percent a hospital stay was necessary. Among those victims injured in violent events, an estimated 1 percent received gunshot wounds, 3 percent received knife wounds, and 6 percent suffered broken bones or lost teeth. Rates of injury from violent and abusive behavior were highest for males, blacks, people aged 19 to 24, people who were separated or divorced, those earning less than $10,000 per year, and residents of central cities. When injured, black victims and elderly victims were substantially more likely than others to require overnight hospitalization.[29]

More than 25 percent of the Nation's 10,000 to 15,000 spinal cord injuries each year are the result of assaultive violence. The proportion of permanent disabling injuries that results from violent behavior varies considerably among geographic areas and population groups and is even higher in urban areas. In Detroit, 40 percent of all traumatic spinal cord injury results from gunshot wounds.[27] This proportion is particularly high among adolescents. In Northern California and Florida, 12 percent and 15.2 percent, respectively, of all spinal cord injuries are caused by violent and unintentional misuse of firearms.[31,37] Even in predominantly rural States such as Arkansas and Oklahoma, gunshot, stabbing, and assault injuries result in between 8.6 and 9.2 percent of all spinal cord disability.[6,40]

The National Crime Survey used to monitor this objective may drastically underreport injuries resulting from the abuse of women because abused women frequently fear reprisals if outsiders are informed and they do not generally regard these events as crimes.[12] In addition, its sampling and interviewing techniques may fail to reach the groups at highest risk for serious injury from assault, and it treats "series" victimizations (i.e., three or more violent events that are similar in nature and experienced by individuals who are unable to identify separately the details of each act) as single incidents.

7.7 Reduce rape and attempted rape of women aged 12 and older to no more than 108 per 100,000 women. (Baseline: 120 per 100,000 in 1986)

Special Population Target

	Incidence of Rape and Attempted Rape (per 100,000)	*1986 Baseline*	*2000 Target*	*Percent Decrease*
7.7a	**Women aged 12-34**	**250**	**225**	

Baseline data source: National Crime Survey, U.S. Department of Justice.

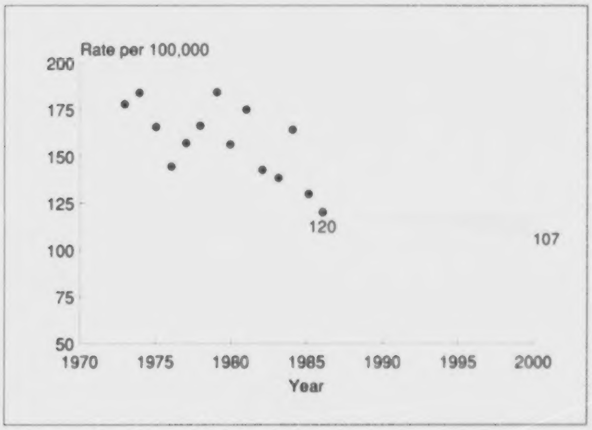


Fig. 7.7

Rate of rape and attempted rape of women aged 12 and older

Young, unmarried, and low-income women are the most frequent victims of rape and rape attempts. Women between the ages of 12 and 34 are particularly vulnerable, with victimization rates more than twice as high as women in other age categories.[13] Most rapists are unarmed and operate alone. Reported offenders are usually strangers to the victim, but this may reflect the reluctance of victims of acquaintance and date rape to report their experiences. Most sexual assaults occur at night and are attempts rather than completed rapes.

The rate of attempted and completed rape is difficult to measure accurately because only about half the victims contact law enforcement officials to report the crime.[13] An advantage of the National Crime Survey for monitoring the incidence of sexual assault is that it detects unreported crimes. However, women may still not report rapes when they are questioned in a context of crime[12] because victims of acquaintance and date rape and other rapes that do not meet common stereotypes often fail to define their experience as rape.

A number of widely accepted false beliefs exist about sexual assault (e.g., rape is always a violent crime and one cannot be raped by someone familiar). One such false belief—that forced kissing, fondling, or sexual intercourse is acceptable behavior in the context of dating relationships—is an important factor underlying sexual assault in our society. A survey of students in the sixth to ninth grades in Rhode Island found that 65 percent of boys and 57 percent of girls believed it was acceptable for a man to force a woman to have sex if they have been dating for more than 6 months. Similarly, 51 percent of boys and 41 percent of girls believed it was acceptable for a man to force a woman to have sex if he had spent a lot of money on her.[34]

Sexual assault awareness programs for adolescents should be initiated to change or modify beliefs that condone sexual assault. The effectiveness of these programs in modifying such beliefs and in subsequently reducing sexually assaultive behavior in dating relationships should also be evaluated.

7.8* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

Attempted suicide is at once a morbid, potentially lethal health event, a risk factor for future completed suicide, and a potential indicator of other health problems such as substance abuse, depression, or adjustment and stress reactions.[1] Although much has been written about the increasing rates of youth suicide in the United States, little is known about patterns and trends in the occurrence of suicide attempts among the young. In several surveys of adolescents in the general populations, as many as 10 percent of the respondents report having attempted suicide at least once.[24,62] However, only a small proportion of those who report having attempted suicide also report having actually required medical attention for their injuries. As a group, suicide attempters with serious medical injuries are at higher risk of repeated suicide attempts and completed suicide than are suicide attempters with minor injuries. [44,56] This objective focuses on that part of the spectrum of suicidal behavior among high school students which results in injuries to the victim. The Centers for Disease Control will initiate surveillance of youth risk behaviors that will establish baseline data and begin tracking this objective beginning in 1991.

* This objective also appears in the *Mental Health and Mental Disorders* priority area as Objective 6.2.

Risk Reduction Objectives

7.9 Reduce by 20 percent the incidence of physical fighting among adolescents aged 14 through 17. (Baseline data available in 1991)

Physical fighting among adolescents is often considered a normal and sometimes even necessary part of growing up. Fighting, however, results in hundreds of homicides and uncounted numbers of nonfatal injuries among adolescents each year. Fighting is the most immediate antecedent behavior for a great proportion of the homicides that occur in this age group and in many instances may be considered a necessary, if not a sufficient, cause. Estimates from the National Adolescent Study Health Survey indicate that 44 percent of 8th and 34 percent of 10th grade students were involved in a physical fight in 1987.[5]

Homicide rates increase by a factor of 15 during adolescence, from a negligible rate of 0.9 per 100,000 at age 10 to 13.9 per 100,000 by age 20.[52] This is proportionately the largest increase in the homicide rate in any decade of life.

A reduction in the incidence of physical fighting may prove extremely important in disrupting the causal mechanisms of homicide and assaultive injury. A variety of professionals have advocated teaching conflict resolution skills to adolescents to decrease their risk of homicide victimization and perpetration.[54] If adolescents can be taught to eschew violence as a way of solving problems, alternative nonviolent patterns of behavior might be carried through life, potentially leading to decreases in other forms of violence and violent injury such as partner abuse.

The Center for Chronic Disease Prevention and Health Promotion (Centers for Disease Control) will initiate a surveillance system of youth risk behaviors that will provide baseline data and track this objective beginning in 1991.

7.10 Reduce by 20 percent the incidence of weapon-carrying by adolescents aged 14 through 17. (Baseline data available in 1991)

Approximately 6 out of 10 homicide victims in the United States are killed with firearms; 9 out of 10 are killed with a weapon of some type, such as a gun, knife, or club. Although many people are killed in the course of being robbed or raped, most homicide victims are killed in the context of an argument, often by persons they know.[15] The immediate accessibility of a firearm or other lethal weapon is considered by many to be the factor that turns a violent altercation into a lethal event.[55]

Although the question of restricting firearm ownership and usage is contentious in American society, few argue that adolescents should have unsupervised access to firearms or other lethal weapons. Fewer still argue that adolescents should be permitted to carry loaded firearms or other lethal weapons at school or on city streets. Yet such weapons are routinely confiscated from adolescents by police or school officials across the Nation.[53] Estimates from the National Adolescent Student Health Survey indicate that 14 percent of 8th and 15 percent of 10th grade students carried a knife at school during 1987. This objective seeks to reduce and monitor the incidence of this high-risk behavior.[5]

The Center for Chronic Disease Prevention and Health Promotion (Centers for Disease Control) will initiate a surveillance system of youth risk behaviors that will provide baseline data and track this objective beginning in 1991.

7.11 Reduce by 20 percent the proportion of people who possess weapons that are inappropriately stored and therefore dangerously available. (Baseline data available in 1992)

The impulsive nature of many homicides and suicides suggests that a substantial portion of those events might be prevented if immediate access to lethal weapons was reduced,[7,60] in particular through appropriate storage of guns and ammunition. More than half of the 20,000 homicide victims in the United States each year are killed by persons they know.[15] In many instances, these homicides are committed impulsively and the perpetrators are immediately remorseful. Similarly, a substantial proportion of the Nation's 30,000 suicides each year are committed impulsively. Impulsive suicide without concomitant clinical depression appears to account for a particularly large proportion of youth suicides.[59] Homicide and suicide attempts are more likely to result in serious injury and death if lethal weapons are used.[77,78] Firearms are both the most lethal and the most common vehicle used for suicide and homicide, accounting for approximately 60 percent of these violent deaths each year.[75]

The controversy over gun control has obscured the fact that a broad range of environmental and behavioral measures may be effective in reducing the immediate access of certain sectors of the population to loaded firearms. ("Immediate access" may be defined as the ability to retrieve a loaded firearm within 10 minutes.) Immediate access to loaded firearms would be reduced if fewer people purchased them, if weapons and ammunition were stored in separate locations, or if parents locked up their weapons and ammunition so that their children could not use them unsupervised. Parents' access to loaded firearms would not be substantially reduced, but their children would not have immediate access to these lethal weapons. Immediate access to loaded firearms would also be reduced if the number of persons illegally carrying loaded firearms in public were decreased. Some jurisdictions have instituted legal measures to ensure waiting periods for purchasing firearms in order to reduce immediate accessibility to firearms by those most likely to misuse them.

Just as different types of environmental and behavioral measures would, if adopted, reduce access to loaded firearms for some segments of the population, strategies are available by which these measures might be achieved. Educational interventions, for example, might be designed to convince parents to take concrete steps to decrease their children's access to loaded firearms. Educational campaigns might also communicate important research findings regarding the relative risks and benefits of keeping firearms in the home, so that the general population can make better informed decisions. Legislative measures, such as those on waiting periods or prescribing mandatory jail terms for illegally carrying firearms, might be viable strategies, since these measures exact relatively minor costs on individual citizens.

By focusing on reducing immediate access to loaded firearms, this objective is meant to allow great flexibility for States and localities to define which mix of outcomes and strategies will best achieve the objective, given their particular resources and social environment. No particular method for achieving the objective is prescribed so that each locality may choose which of the various strategies is most appropriate and acceptable to its particular population. The Centers for Disease Control plans to establish baseline data and track this objective.

Services and Protection Objectives

7.12 Extend protocols for routinely identifying, treating, and properly referring suicide attempters, victims of sexual assault, and victims of spouse, elder, and child abuse to at least 90 percent of hospital emergency departments. (Baseline data available in 1992)

Hospital emergency departments are a key point of contact with victims of violent and abusive behavior. These departments should adopt standard protocols to facilitate and routinize early recognition of such victims and timely referral for appropriate intervention and treatment. Such efforts can be reasonably expected to lower the death and injury rate due to violent and abusive behavior (including the emotional consequences that are frequently associated with repeated exposure to violent and abusive behavior) for individuals who live in an environment where they are likely to be victimized repeatedly.[9,35]

Standard protocols have proven useful in the identification of battered women among female trauma patients in emergency departments. One large metropolitan hospital found that 21 percent of women who used the emergency surgical service were battered and almost half of all injuries presented by women to the emergency surgical service occurred through abuse. However, only 1 battered woman in 25 was diagnosed as such by medical personnel.[63] In another example, the percentage of women identified as battered in the emergency department of the Medical College of Pennsylvania increased from 5.6 percent to 30 percent following staff training and the introduction of a standard protocol.[43]

Protocols for identifying, treating, and referring victims of violent and abusive behavior are used in many hospital emergency departments across the country. A first step toward achieving this objective would be to review and evaluate existing protocols and, on the basis of such a review, develop model guidelines for hospitals to adopt in implementing standard protocols. The Center for Environmental Health and Injury Control plans to initiate a surveillance system to establish baseline data and track this objective by 1992.

7.13 Extend to at least 45 States implementation of unexplained child death review systems. (Baseline data available in 1991)

Numerous communities have systems to review unexplained child deaths. These systems are important for accurately identifying child abuse deaths, assuring that living children in families in which child abuse deaths occur are adequately protected, and determining how child abuse death cases could have been managed more effectively by agencies with which the child victims had contact.[36] Comparable to hospital protocols that investigate unexpected patient deaths, such systems hold promise of defining remediable weaknesses in community child protection networks. The Center for Environmental Health and Injury Control (Centers for Disease Control) plans to collaborate with the National Committee for Prevention of Child Abuse to establish a baseline and track this objective in 1991.

7.14 Increase to at least 30 the number of States in which at least 50 percent of children identified as neglected or physically or sexually abused receive physical and mental evaluation with appropriate followup as a means of breaking the intergenerational cycle of abuse. (Baseline data available in 1993)

Being abused or neglected as a child increases one's risk for violent behavior as an adult.[74] The common treatment for the physically or sexually abused child is to modify the child's environment by placement outside of the home or to provide therapeutic treatment for the parents. The abused child's devalued self-image, loss of trust, and distorted view of parent-child relationships are not addressed by either of these strategies.[19] If child abuse is to be prevented, abused children must be treated to improve their future relationships with their own children.

Standard diagnostic protocols are needed and should be administered to children identified as being neglected or physically or sexually abused. These assessments should be used to guide abused children to appropriate therapeutic treatments. A variety of treatment strategies exist which may be valuable for breaking the intergenerational cycle of abuse.[21] Nevertheless, further research into the long-term effects of abuse and neglect on children is needed along with long-term evaluations of the effect of psychotherapy.

The Center for Environmental Health and Injury Control will collaborate with the National Committee for Prevention of Child Abuse to establish baseline data and track this objective by 1993.

7.15 Reduce to less than 10 percent the proportion of battered women and their children turned away from emergency housing due to lack of space. (Baseline: 40 percent in 1987)

Baseline data source: Domestic Violence Statistical Survey.

In 1987, nearly 40 percent of battered women and children in need of emergency housing were turned away because of lack of space. In some States, shelters turn away 2 battered women for every woman who receives services. In 1987, there were 935 shelters available to battered women, 550 safe homes, and 303 nonresidential programs.[67]

The lack of available space for battered women and their children could be partially alleviated if more shelters were available. Also, the demand for emergency housing could be reduced if more nonresidential programs were available. Nonresidential programs can help some women to avoid severe battering by providing them with remedial options early in the battering cycle and, thereby, alleviate the demand for shelter services. Increasing nonresidential programs may also be a practical option in rural areas where support for shelters may be unavailable but where battered women are still in need of services.

7.16 Increase to at least 50 percent the proportion of elementary and secondary schools that teach nonviolent conflict resolution skills, preferably as a part of quality school health education. (Baseline data available in 1991)

Schools provide a strategic setting for the prevention of violent and abusive behavior.[49] They contain a captive audience, many of whose members are at risk of becoming victims or perpetrators of interpersonal violence. Health-related knowledge, attitudes, and behaviors can be positively affected through school health education curricula.[14] Curricula have been developed for various grade levels that seek to change knowledge about and attitudes toward violence and to instill interpersonal skills for resolving conflicts nonviolently.[49] The principles underlying these programs, already successfully applied to the prevention of substance abuse, include providing information about the medical and social consequences of individual behaviors and improving interpersonal and decision making skills.[23,42,48]

A program has been developed to show educators how to teach children social and cognitive skills that enable them to resolve conflicts nonviolently.[58] Another program directly focuses on changing adolescents' behaviors and attitudes toward violence. This 10-session high school curriculum teaches students about the magnitude of the violence problem, their vulnerability to violent injury, the role of anger in human interactions, and strategies for nonviolent forms of conflict resolution.[54]

While studies of the effectiveness of these curricula in reducing violent and abusive behaviors are inconclusive, these curricula seem promising. At least one study has shown that they can be effective in diminishing attitudes that justify violent behavior and in improving social problem-solving abilities.[28]

For a definition of quality school health education, see *Educational and Community-Based Programs*. The Center for Chronic Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1991.

7.17 Extend coordinated, comprehensive violence prevention programs to at least 80 percent of local jurisdictions with populations over 100,000. (Baseline *data available in 1993*)

A coordinated, comprehensive effort by State and local health, criminal justice, and social service agencies is necessary to maximize resources and ensure the availability of violence prevention strategies and information to all segments of the population. Collaboration across these traditionally disparate agencies is necessary to break down barriers that impede violence prevention and control activities.

Without such collaboration, programs such as target hardening, domestic crisis intervention, and violence prevention education very often are developed without regard to other activities operating in an area and/or without the support of the community in which the program operates. These programs typically approach violence prevention from a singular perspective, not recognizing that successful prevention requires a variety of different disciplines and organizations working together to develop a range of programs tailored to the specific needs of a community.

Comprehensive violence prevention programs should incorporate strategies that are potentially effective for preventing specific types of interpersonal violence. For example, a comprehensive approach to the prevention of child maltreatment might include the following strategies:

- Public awareness programs for citizens about positive parenting, positive family support, and cues to suspect child physical and sexual abuse and how to report it to authorities.
- Prenatal health care and parenting education and support programs for new parents (including home health visitor programs).[20]
- Support services for parents under stress (such as child care, respite care, crisis nurseries, helplines, self-help groups, and other natural helping networks, provisions for linkages and continuity of care and services, housing and other basic necessities, job training).
- School-based age-specific prevention education programs for all school-aged children.
- Therapeutic care for victims and perpetrators of physical and sexual abuse; home-based transition and follow up services for children and their families.[21]
- Projects for the prevention of alcohol- and other drug-related child abuse and neglect including substance abuse as a component of parenting education and curriculum training programs.
- Hospital-based (or related health facility as may be available in a rural area) information and referral services for parents of children with disabilities and children who have been neglected or physically or sexually abused by their parents.
- Multidisciplinary training programs for professionals involved in the planning and implementation of community programs.

Comprehensive efforts to address domestic violence in States and local areas may include the following strategies:

- Public awareness programs that help dispel myths about domestic violence and publicize sources of shelter and support for battered women and their children.

- Coordination among the criminal justice system, domestic violence programs, child protective services, substance abuse programs, mental health centers, and the medical community for referral, intervention, and case management.
- Expansion of court-ordered treatment programs for abusers.
- Expansion of emergency shelter and support services for victims.
- Expansion of transitional and low-income housing resources for victims to help them achieve safety and economic self-sufficiency.
- Training programs for professionals in medical, legal, and social service fields who deal with potential victims and abusers or who are involved in the planning and implementation of prevention programs.

Specific strategies that may be useful components of comprehensive programs exist for other types of violence and abuse such as elder abuse, sexual assault, firearm injuries, and acquaintance violence as well.[49] Although there are creative and promising preventive interventions, little is known about their effectiveness. Consequently, it is important that States and local entities initiating comprehensive programs collect rigorous evaluation evidence to document effectiveness.

The Center for Environmental Health and Injury Control (Centers for Disease Control) will collaborate with the National Center on Child Abuse and Neglect and the National Committee for Prevention of Child Abuse to establish baseline data and track this objective by 1993.

7.18* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

Recent developments in screening techniques designed for use within correctional settings should aid in the detection of both suicidal and mentally ill arrestees.[30] However, only 36 of the 50 states currently have either voluntary or mandatory jail standards regarding suicide; only 8 State jail standards specify suicidal behavior inquiry in their intake screening; fewer than 12 State jail standards have specific policies and procedures regarding suicide prevention; only 6 standards specify suicide prevention training in their staff training curriculum; and only 2 States specify continuous observation for certain groups of suicidal inmates. Although the courts mandate that jails conduct routine mental health evaluations, many do not comply. Moreover, although the courts have stipulated that mentally ill prisoners must receive treatment for mental disorders, many, particularly those in rural areas, have no mental health liaison. [2,3,4,51]

Suicide is the leading cause of death in American jails. The suicide rate among inmates in county jails and police lockups is 16 times greater than that for individuals in the general population, and the size of the national jail population has been growing rapidly. Two types of jails are of primary concern: holding facilities, which normally detain persons for less than 48 hours, and detention facilities, which normally detain persons for more than 48 hours but less than 2 years.[50]

The most common demographic profile of an inmate suicide victim is an unmarried white male in young adulthood. About three-quarters of the victims are arrested for nonviolent offenses, with 27 percent being detained on alcohol- or other drug-related charges. More than half of the victims are intoxicated at the time of incarceration. In 94 percent of the suicides, the method is by hanging; 48 percent of the victims use bedding to hang themselves. Two-thirds of victims are in isolation at the time of their suicide. High-risk periods include the time immediately upon admission to a facility; after adjudication, when the inmate is returned to a facility from court; following the receipt of bad news regarding self or family; and after suffering some type of humiliation or rejection. Severe depression is also a significant risk factor.[30]

An epidemiologic survey of urban jail detainees in Cook County, Illinois, found the rate of psychotic disorders among incoming jail detainees to be two to three times the rate in the community population, with some indication that mentally ill persons with co-occurring substance abuse and personality disorders may be the most vulnerable to arrest because few treatment alternatives are available.

The National Center on Institutions and Alternatives has developed the Training Curriculum on Suicide Detection and Prevention in Jails and Lockups. Several key elements of effective suicide prevention in jails are emphasized. First, intake screening must be performed on every arrestee immediately upon entry into the jail facility to assess suicide potential and triage arrestees based on this assessment. Second, continued observation and awareness of suicidal potential during the initial period of incarceration is essential. Third, the use of isolation enhances the chance of suicide and it should, therefore, be prohibited. Finally, physical modifications in the jail environment such as barless windows and doors, tearaway blankets, and television monitors may be useful in preventing suicide but should not be substituted for human interaction.

The National Institute for Correctional Alternatives will provide the data to establish a baseline and track this objective.

* This objective also appears in the *Mental Health and Mental Disorders* priority area as Objective 6.10.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the violence and abusive behavior objectives include the following:

- Provide curricular content on the prevention and identification of violent and abusive behavior in all schools and programs preparing students for careers in primary health care, primary and secondary education, law enforcement (including juvenile justice and court personnel), social work, mental health, child development and child care, elder care, and recreation, and ensure that all graduates of such schools and programs can demonstrate knowledge of relevant information.
- Increase the provision of continuing and inservice education on the prevention and identification of suicidal behavior, violent and abusive behavior by national professional associations and by health, education, and social service systems whose members and employees have roles in the prevention, identification, and/or treatment of child abuse and neglect, domestic violence, elder abuse, rape and assault, or any other form of interpersonal violence.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 7.1, 7.2, 7.3, 7.6, and 7.7.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 7.4, 7.5, 7.8, 7.9, 7.10, and 7.14.

New surveillance systems are needed to track Objectives 7.11, 7.12, 7.13, 7.15, 7.16, 7.17, and 17.18.

High Priority Needs

The development of prevention programs requires better information on violent and abusive behavior and injury, their distribution, principal health outcomes, and associated costs. The most glaring dimension of this problem is the uniformly poor availability and quality of data on injury. This need will be greatly advanced by achievement of the surveillance and data systems envisioned in the priority area on Unintentional Injuries. In addition, the following improvements are needed over the coming decade:

- Development of a uniform classification system, set of standard definitions, and identification criteria for injury and death associated with violent and abusive behavior to be used in completing death certificates, assigning International Classification of Diseases Supplemental Classification of External Causes of Injury and Poisoning (E-codes), and surveillance systems. Uniform criteria for use by medical examiners and coroners in determining suicide as a cause of death have been developed but require broader dissemination.
- Establishment and refinement of methods for monitoring injury for the following key dimensions of violent and abusive behavior: domestic violence (including partner abuse, elder abuse, child maltreatment, and sexual assaults involving acquaintances); firearm-related injuries; violence involving minority and impoverished youth; the involvement of illicit drug use and trafficking; and suicide attempts.
- Development and refinement of risk factor surveys to provide a better understanding of the prevalence and distribution of risk factors for injury and death associated with violent and abusive behavior such as weapon ownership and use, alcohol and drug use, fighting, and suicide attempts.
- Incorporation of information on the victim/offender relationship into Federal, State, and local surveillance systems for injury.
- Development and implementation of procedures for more accurate information to be collected on violent and abusive behavior among ethnic groups in the U.S. population on death certificates and other relevant data sources.

Research Needs

Understanding of the causes of violent and abusive behavior must be advanced substantially to establish a firm foundation for effective prevention. Research should focus on factors that are amenable to change or that suggest the possibility of preventive intervention. These research needs will be most effectively met through multidisciplinary approaches, including such disciplines as epidemiology, sociology, criminology, psychology, economics, medicine, statistics, law, public health, genetics, neurobiology, and biomechanics. Resources are needed to facilitate a coordinated effort to develop and implement a national research agenda over the next decade. Emphasis must also be given to the evaluation of the impact of current violence prevention policies. This is particularly critical because many unevaluated programs are purported to prevent various dimensions of violent and abusive behavior. In addition, the effectiveness of many publicly mandated treatment programs and laws that are intended to modify potential risk factors for violence remains unknown.

Specific research needs for the area of violent and abusive behavior are:

- Epidemiologic investigations focusing on quantifying the risk of injury associated with the possession of firearms and factors that may modify that risk.
- The systematic development, implementation, and rigorous evaluation of comprehensive community-based violence prevention programs.
- Basic research on the biomedical, molecular, and genetic underpinnings of interpersonal violence, suicidal behavior, and related mental and behavioral disorders.
- Research recommendations made in *Injury Prevention: Meeting the Challenge*, by the National Committee for Injury Prevention and Control.[49]
- Research recommendations to be made by the National Academy of Sciences' Panel on the Understanding and Control of Violent Behavior in 1991.
- Research recommendations made in the Report of the Secretary's Task Force on Youth Suicide, U.S. Department of Health and Human Services, in 1989.[76]
- Determination of which childhood exposures and behaviors are most predictive of future violent behavior and what interventions are most effective and developmentally appropriate for reducing the effects of harmful exposures or modifying predictive behaviors.
- Identification of situational factors that increase the risk of violent altercations (e.g., the distribution and use of illicit drugs, gang memberships) and situational factors that increase the risk of injury given the occurrence of violent altercations (e.g., intoxication of the combatants, accessibility of lethal weapons).

Related Objectives From Other Priority Areas

Alcohol and Other Drugs

4.3 Drug-related deaths
4.4 Drug abuse-related emergency room visits
4.5 Average age of first use
4.6 Use by young people
4.7 Heavy drinking by high school seniors and college students
4.8 Alcohol consumption
4.9 Perception of social disapproval by high school seniors
4.12 Access to treatment programs
4.13 Alcohol and drug education in schools

Mental Health and Mental Disorders

6.5 Adverse health effects from stress
6.12 Mutual help clearinghouses

Educational and Community-Based Programs

8.2 Completion of high school
8.3 Preschool child development programs
8.4 Quality school health education
8.6 Worksite health promotion activities
8.10 Community health promotion programs

Unintentional Injuries

9.9 Nonfatal head injuries
9.10 Nonfatal spinal cord injuries
9.15 Handgun design to protect children
9.18 Injury prevention instruction in schools

Occupational Safety and Health

10.12 Worksite health and safety programs

Diabetes and Chronic Disabling Conditions

17.21 Service systems for children with or at risk of chronic and disabling conditions

Surveillance and Data Systems

22.3 Comparable data collection procedures

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Educational and Community-Based Programs

8

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8. Educational and Community-Based Programs

Introduction

Attainment of the *Healthy People 2000* objectives will depend substantially on educational and community-based programs to promote health and prevent disease. Community-based interventions and programs attempt to reach and improve the health of many people, outside of traditional health care settings. Whereas a community-based intervention is a single action or activity initiated for the purpose of encouraging or supporting change, a program is a planned, coordinated, ongoing effort that characteristically includes multiple interventions. While community-based programs may address a single risk factor or health problem, many are starting to take a more comprehensive and often more positive approach to health and well-being. Community-based programs also increasingly recognize the importance of addressing the social and physical environment in which behavior occurs and which both shapes and is shaped by behavior.

Many community-based interventions or programs are designed for people who congregate in a particular setting, such as students within a school, employees at a worksite, or members of a religious congregation. Health promotion programs in these settings can reach large numbers of people with intensive and effective interventions and are relatively easy to implement. Although often isolated enterprises, these programs may involve other community organizations in program planning or service delivery. They may also include outreach activities designed for people outside of the setting (e.g., information and activities for students' parents or the families of employees).

Other community-based interventions and programs are intended to be communitywide from the outset. Among the most common communitywide interventions are the activities of individual community organizations such as voluntary health agencies, local health departments, park and recreation departments, and other organizations that view the community as their client. Increasingly, emphasis is placed on collaborative efforts among various sectors to promote the health of the entire community. A growing number of communities now have community health promotion programs and are striving to achieve healthy communities.

The most effective community-based health promotion programs recognize the interrelationships between behavior and the environment and include multiple interventions directed at multiple levels (e.g., individuals, small groups/families, organizations, community). This is true regardless of the target population or the issues being addressed. For example, at a worksite, an effective program might include the following elements: individualized health hazard appraisals, self-help programs, group classes, support groups, action teams, interdepartmental competitions, companywide events, a physical environment that is safe and supports healthy habits (e.g., healthy food service selections, convenient fitness facilities), a healthy psychologic and social environment (e.g., reasonable job demands, flex-time, convenient child care), and health-promoting corporate policies (e.g., a smoke-free worksite policy, health insurance coverage including coverage for clinical preventive services). Similarly, communitywide programs might include media campaigns; communitywide events and programs (e.g., community cooking classes, cookbooks, and cook-offs); greater availability of health-promoting facilities (e.g., recreation space, bicycle trails); new laws and regulations; new market products and production processes; restaurant and grocery store programs; school, worksite, and place-of-worship health promotion programs; intensified and coordinated efforts by governmental agencies and service organizations; increased emphasis on health promotion within medical care settings; information dissemination, persuasive communication, and skills training at all levels; and appropriate health and risk assessments at all levels. The aim of a community health promotion program is to draw upon as many aspects of community life as possible.

Finally, bringing about these changes requires a blending together of various theoretical frameworks. Community-based intervention models typically employ state-of-science communication and education strategies combined with behavioral science technology and effective community organization, social diffusion, and social support frameworks. For example, a community health promotion program might rely on communication and behavior change theories to guide choices on program content, on social marketing to improve design and distribution, and on community organization to create an environment that will be receptive to programs and encourage community groups to create their own educational approaches.

In a democratic society, health education is particularly important to assure that individuals have the information and skills they need to protect and enhance their own health, the health of families for which they are responsible, and the health of the communities in which they live. Effective health education enables individuals to make informed choices about behaviors that will affect their health; and enables populations to collectively make informed decisions about the allocation of health resources, implementation of health programs and services, and enactment of legislation to protect the health of populations.

Health education in the school setting is especially important for helping children and youth develop the increasingly complex knowledge and skills they will need to avoid health risks and maintain good health throughout life. Quality school health education that is planned and sequential for students in kindergarten through 12th grade, and taught by educators trained to teach the subject, has been shown to be effective in preventing risk behaviors. Quality school health education addresses and integrates education, skills development, and motivation on a range of health problems and issues (e.g., nutrition, physical activity, injury control, use of tobacco, alcohol, and other drugs, sexual behaviors that result in HIV infection, other sexually transmitted diseases, and unintended pregnancies) at developmentally appropriate ages (see Objective 8.4). The content of the education is determined locally by parents, school boards, and other members of the community.

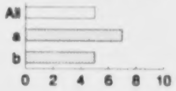
Other aspects of the school environment can also be important to school health. State and local health departments can work with schools to provide a multidimensional program of school health that may include school health education, school-linked or school-based health services designed to prevent, detect, and address health problems, a healthy and safe school environment, physical education, healthful school food service selections, psychological assessment and counseling to promote child development and emotional health, schoolsite health promotion for faculty and staff, and integrated school and community health promotion efforts.

Finally, educational and community-based programs must be supported by accurate, appropriate, and accessible health information derived from the prevention science base. Both the content and the delivery channel must be tailored to the informational needs of children, parents, teachers, community leaders, health professionals, and health officials. At the same time, there is a need to improve coordination among sources of health information and to increase points of entry into the vast but disparate network of information resources both through electronic technology and through traditional local channels like libraries and interpersonal networks.

Health Status Objective

8.1* **Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)**

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*	*Percent Increase*
8.1a	**Blacks**	56	60	
8.1b	**Hispanics**	62	65	
8.1c	**People aged 65 and older**	12†	14†	

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Baseline data source: National Vital Statistics System and the National Health Interview Survey, CDC.

Educational and community-based health promotion and disease prevention interventions have an important role to play in reducing preventable illness, injury, disability, and premature death in the United States. Achieving the objectives in this priority area will help to attain the health status objectives found in other chapters. However, in keeping with the comprehensive (as opposed to categorical) nature of the objectives in this chapter, a comprehensive measure of the health of a population has been proposed to track the overall impact of the Nation's efforts to implement more intensive and extensive educational and community-based interventions. Although other factors such as advances in treatment or increases in the use of clinical preventive services can influence this measure of the Nation's health, achieving the objectives in this priority area can contribute to a substantial increase in years of healthy life.

In recent years, considerable effort has been devoted to developing a comprehensive measure of the population's health that combines morbidity and mortality. Without such a measure, efforts to monitor the Nation's health, identify health priorities, evaluate the effectiveness of interventions, and compare the relative effectiveness of alternative interventions are hindered. While several approaches have been developed, the quality-adjusted life year (QALY) has emerged as one of the most commonly used health status measures that includes both mortality and morbidity.[12] This measure is sensitive to changes in health both among the well and the ill, and is increasingly being used in cost-utility studies.

The calculation of years of healthy life (quality-adjusted life years) requires two sets of data. First, a life table of the population (as is used to calculate life expectancy) is needed. Life tables specify the proportion of people living and dying in each age interval and the average number of years of life remaining at the beginning of each age interval. Also needed are age-specific estimates of the well-being of a population comparable to the population represented by the life table. The measures of well-being include measures of mental, physical, and social functioning. For example, social functioning may be measured in terms of an individual's limitation in performing his or her usual social role whether this be work, school, or housework; physical functioning may be measured in terms of being confined to bed, chair, or couch due to health reasons.

By multiplying the measure of well-being by the number years of life remaining at each age interval, an estimate of the years of healthy life for a population can be derived. The baseline estimates are based on data from the 1979 and 1980 National Health Interview Survey, which covers the civilian non-institutionalized population, and on other data representing institutionalized populations in the United States. The Quality of Well-Being Scale was used as the model for developing national estimates of well-being.

In 1980, life expectancy at birth for the U.S. population was 73.7 years. This implies that everyone lived in a state of full functioning throughout the duration. In reality, people have various acute and chronic illness episodes at various times during their lifetimes which are not reflected in a measure that is only based on mortality. Accounting for these episodes yields 62 years of healthy life for the total population. For blacks, a life expectancy at birth of 68 years translates to 56 years of healthy life. For Hispanics, a life expectancy at birth of about 75 years translates to 62 years of healthy life. While people aged 65 and older have 16.4 years of life remaining on average, they have about 12 years of healthy life remaining.

Targets for the year 2000 were estimated by modeling the effects that changes in both life expectancy and well-being from 1980 to 1987 would have on the number of years of healthy life. These estimated changes in years of healthy life over a 7-year interval were used to project the number of years of healthy life that might reasonably be expected in the year 2000.

This objective seeks to increase years of healthy life for the total population by 3 years—to 65 years—by the year 2000. Although this increase will most likely be attained through a combination of decreased mortality and increased well-being, the intent of the objective is to foster health promotion and disease prevention activities directly aimed at improving the health-related quality of life of the U.S. population.

Use of the years of healthy life indicator represents an innovation in the type of measures used to portray the health of the Nation. The methods and data used for setting baseline estimates and for arriving at year 2000 targets are currently in developmental stages. Over the coming decade, limitations of both methods and data will be addressed. As a result, the estimates provided here may change. However, the tradeoffs between quantity and quality of life are becoming increasingly critical. Thus, even though the targets may be revised as a result of methodological refinements, years of healthy life is such an informative indicator that it was considered important to include in this report.

*This objective also appears as Objective 17.1 in *Diabetes and Chronic Disabling Conditions* and as Objective 21.1 in *Clinical Preventive Services.*

Risk Reduction Objective

8.2 Increase the high school graduation rate to at least 90 percent, thereby reducing risks for multiple problem behaviors and poor mental and physical health. (Baseline: 79 percent of people aged 20 through 21 had graduated from high school with a regular diploma in 1989)

Note: This objective and its target are consistent with the National Education Goal to increase high school graduation rates. The baseline estimate is a proxy. When a measure is chosen to monitor the National Education Goal, the same measure and data source will be used to track this objective.

Baseline data source: Current Population Survey, U.S. Department of Commerce.

Dropping out of school is associated with later unemployment, poverty, and poor health. During adolescence, dropping out of school is associated with multiple social and health problems including substance abuse, delinquency, intentional and unintentional injury, and unintended pregnancy. The antecedents of these problems appear to be highly intercorrelated and may form a constellation of common precursors. Some researchers suggest that the antecedents of drug and alcohol problems, school dropout, delinquency, and a host of other problems can be identified in the early elementary grades, long before the actual problems are manifest. These include low academic achievement and low attachment to school; adverse peer influence; inadequate family management and parental supervision; parental substance abuse; sensation-seeking behavior; early use of tobacco, alcohol, or marijuana; early aggressive or acting-out behavior; and diminished self-efficacy. For example, children who perform poorly in school, are more than a year behind their modal grade, and are chronically truant are more likely to exhibit risk behaviors and experience serious problems in adolescence. Children are also placed at increased risk when their attitudes toward education are negative and their adjustment to school has been difficult. Finally, risk is increased if children fail to form meaningful social bonds to positive adult and peer role models with whom they interact at school or in the community.

Although more research on the risk factors for multiple problem behaviors is needed, sufficient scientific knowledge currently exists to guide public health program planning and policy development. For example, child development programs for low-income preschoolers can foster positive attitudes toward school, enhance school performance, and increase high school graduation rates (see Objective 8.3). Mentor programs that pair disadvantaged youth with caring adults have also been shown to be effective in improving both academic and employment success. By addressing high school dropout rates as part of the Nation's health promotion and disease prevention agenda, it may be possible to reduce unwarranted risk of problem behavior and improve the health of our young people.

The target of 90 percent set for this objective is consistent with the National Education Goal to increase the high school graduation rate to at least 90 percent by the year 2000. A National Education Objective under that goal is to eliminate the gap in high school graduation rates between minority and nonminority students. In 1989, only 54 percent of Hispanic and 76 percent of black youth aged 20 through 21 had graduated from high school with a regular diploma. This compares to a graduation rate of 84 percent for white, non-Hispanic youth.

Services and Protection Objectives

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

Baseline data source: Head Start Bureau, Office of Human Development Services.

High-quality early childhood development programs can improve children's social skills, problem-solving abilities, self-esteem, and long-term school performance by providing a positive introduction to learning that instills the motivation and the basic skills they need to thrive in the classroom, at home, and later in life. Pooling the results of 11 preschool experiments, the Consortium for Longitudinal Studies found that students with preschool experience had much lower rates of subsequent special education placement and grade retention and higher rates of high school graduation than students with no preschool experience. Of the former preschoolers who had reached graduation age, 15 percent had been placed in special education classes compared to 40 percent of the children who had not attended preschool, 33 percent had repeated a grade compared to 50 percent, and 67 percent had completed high school compared to 50 percent. Other long-term followup results have shown that State-funded prekindergarten programs in New York and Maryland improved students' later school performance in comparable ways. Similar advantages have been found for a broad array of child development programs, not just those labeled preschool.

The location of the child development program—day care home, community center, or school—does not necessarily determine program outcome. Quality is the critical variable. The most important standards for a high-quality early childhood program are staff training in early childhood education and high adult to child ratios. The National Association for the Education of Young Children recommends an adult to child ratio of 1:10 for 3- and 4-year-olds. Curricula should emphasize play and discovery, not rote learning, and should be developmentally appropriate. To be effective, programs for at-risk preschoolers must be comprehensive, addressing the child's social, emotional, cognitive, and physical development. Parent involvement is also essential and should be maximized. The program must involve parents and other caretakers in day to day decisions as well as offer them education and support. All programs should meet standards for health and safety.

One of the best known early childhood development programs is Head Start, which has served almost 10 million disadvantaged children since its inception in 1965. However, Head Start is not the only program serving disadvantaged children and children with disabilities. Increasing numbers of States and localities are developing preschool programs for disadvantaged children. In addition, low-income children participate in private preschool programs, such as church-based programs, where fees sometimes are a function of income or public funds may subsidize their participation. Early childhood programs for children with disabilities are offered by a variety of providers and take many forms.

8.4 Increase to at least 75 percent the proportion of the Nation's elementary and secondary schools that provide planned and sequential kindergarten through 12th grade quality school health education. (Baseline data available in 1991)

Schools offer the most systematic and efficient means available to improve the health of youth and enable young people to avoid health risks. They provide an avenue for reaching more than 46 million students each year. Planned and sequential quality school health education programs help young people at each appropriate grade to develop the increasingly complex knowledge and skills they will need to avoid important health risks, and to maintain their own health, the health of the families for which they will become responsible, and the health of the communities in which they will reside. The content of the education is determined locally by parents, school boards, and other members of the community.

School health education has been defined by the Education Commission of the States,[11] the National Professional School Health Education Organizations, [20] the World Health Organization,[32] and the Centers for Disease Control. To one extent or another, each of these definitions embraces an educational experience that fosters the development of health-related knowledge, attitudes, and skills on various topics within areas such as community health, environmental health, family life, nutrition, physical activity, personal health practices, injury prevention, and substance use and abuse.

Many studies have shown that properly designed and implemented school health education programs can be effective in preventing risk behaviors. For example, the School

Health Education Evaluation, a three-year study of four health education programs, demonstrated that the programs evaluated helped children improve health knowledge, attitudes, and behaviors.[9] The effectiveness of these programs were influenced by the amount of classroom time devoted to the program, the extent to which school administrators supported the program, and the extent to which teachers were prepared and motivated to implement the program.

As of 1989, 25 States had mandated that schools implement school health education programs and another 9 States had recommended that schools implement such programs. However, national data sources give varying estimates regarding the actual proportion of schools currently offering comprehensive school health education curricula. In 1985, a Metropolitan Life survey of public school district superintendents estimated that 34 percent of the Nation's children receive multitopic, multigrade school health education. A 1988 Metropolitan Life survey of public school teachers (grades 3 through 12) found 67 percent reporting that their schools offered multitopic, multigrade curricula. Most experts consider these to be overestimates. The National School Boards Association is currently using the CDC interim definition to assess the extent to which the Nation's 15,000 school districts require broad-based school health education programs.

To attain this objective, all States and school districts should require and support planned and sequential quality school health education for students in kindergarten through 12th grade. To assure the implementation of high-quality school health education programs, States should require health literacy, the health equivalent of basic literacy, as a requirement for graduation.

Other aspects of the school environment are also important to school health. State and local health departments can work with schools to provide a multidimensional program of school health that may include school health education, school-linked or school-based health services designed to prevent, detect, and address health problems, a healthy and safe school environment, physical education, healthful school food service selections, psychological assessment and counseling to promote child development and emotional health, schoolsite health promotion for faculty and staff, and integrated school and community health promotion efforts.

8.5 Increase to at least 50 percent the proportion of postsecondary institutions with institutionwide health promotion programs for students, faculty, and staff. (Baseline: At least 20 percent of higher education institutions offered health promotion activities for students in 1989-90)

Baseline data source: American College Health Association.

Postsecondary institutions include 2- and 4-year community colleges, private colleges, universities, and trade and technical schools. Health education and health promotion activities in these settings may have special merit. Colleges and universities are the training ground for the Nation's future leaders, teachers, corporate executives, health professionals, and public health personnel. Personal involvement in a health promotion program can educate future leaders about the importance of health and engender a commitment to prevention that will benefit the future patients, students, and employees of today's students.

Postsecondary schools also offer one of the few settings outside the military where large numbers of 18- to 24-year-olds can be easily reached. Currently, more than 12 million students, 5 percent of the U.S. population, are enrolled in U.S. colleges and universities. Two million are full-time students between the ages of 18 and 22 living on campus. As health beliefs and practices are still developing during late adolescence, it is important to continue to model, encourage, and support lifestyles conducive to good health. In addition, if the Nation is to be successful in addressing important public health problems, such as HIV transmission and substance abuse, this student population will be a key group to influence.

Several characteristics of the postsecondary school environment provide unique opportunities for student health promotion and disease prevention.[14] The nature of the school, college, or university as a learning environment offers many points for intervention. In classes and other structured settings, students are a captive audience. Well-established student services can play a central role in health education and health promotion activities for students. Facilities such as sports arenas can be used for health promotion activities. Students themselves tend to be interested in taking a leadership role in developing educational campaigns for their peers.

For many postsecondary schools, the presence of schools in various health fields provides ready access to experienced professionals who can collaborate in establishing effective institutionwide health promotion programs. Not only does the program benefit, but such collaboration benefits faculty by providing them with research and practice opportunities to further enhance or maintain their skills.

Presently there are no reliable national estimates of the proportion of postsecondary schools that offer institutionwide health promotion programs for students, faculty, and staff. Surveys of 3,000 postsecondary institutions conducted by the American College Health Association in 1989-90 suggest that at least 20 percent of the institutions surveyed offered health promotion activities for students. Another estimate is available for schools of medicine. In 1986, 143 accredited medical schools in the United States (124), Canada (16), and Puerto Rico (3) were surveyed to determine how many offered health promotion programs for their students, faculty, and staff. Of the 120 respondents, 29 schools (24 percent) reported offering a program for students and 45 percent of these offered programs for faculty and staff.[30]

8.6 Increase to at least 85 percent the proportion of workplaces with 50 or more employees that offer health promotion activities for their employees, preferably as part of a comprehensive employee health promotion program. (Baseline: 65 percent of worksites with 50 or more employees offered at least one health promotion activity in 1985; 63 percent of medium and large companies had a wellness program in 1987)

Baseline data sources: For worksites with 50 or more employees, the National Survey of Worksite Health Promotion Activities, ODPHP; for medium and large companies, the Health Research Institute biennial survey.

The workplace, where more than 85 percent of adult Americans spend much of their day, can be an excellent site for health promotion programs. Workers can benefit by having access to health-promoting messages and activities and can take advantage of the support system provided by coworkers. Employers can benefit from expected improvements in morale, decreases in absenteeism, and controlled health care costs. Benefits to workers and employers can be further increased by including family members and retirees in health promotion programs.

In 1985, a national survey of worksite health promotion activities estimated that 65 percent of U.S. workplaces with more than 50 employees offered at least 1 health promotion activity.[21] The 1987 biennial survey conducted by the Health Research Institute found that 63 percent of corporate respondents offer wellness programs.[15] However, limited data from a pilot survey of Fortune 500 companies conducted by the Washington Business Group on Health suggest that few programs involve or include special activities for family members or retirees.

Worksite health promotion programs can take many forms but should include the following elements: (1) an understanding and description of the organizational context within which the program operates, (2) identifiable target groups, (3) determination of baseline health or risk measures and a plan to determine program effects, and (4) well-selected and -defined intervention measures. Health risks and target groups can be identified by conducting an employee survey, examining health risk appraisal group profiles, and reviewing health care utilization data. The cooperation of labor and management groups is essential.

High program participation rates are necessary to achieve the organizational benefits of worksite health promotion efforts. These can be achieved by permitting employees to participate on company time, offering a variety of activities, and maximizing convenience. A promotion and education campaign can increase program visibility and aid in recruiting program participants. Incentives and awards for regular participation or achievement can help motivate people to continue participation. Employee involvement in planning and managing the program can also be important to program success. Special effort should be made to target high-risk employees. Optimally, worksite health promotion efforts should be part of a comprehensive occupational health and safety program (see Objective 10.12 in *Occupational Safety and Health*).

Although this objective specifically targets worksites with 50 or more employees, many workers are employed by smaller businesses. Furthermore, a national trend toward decentralizing the span of management control has resulted in greater numbers of workplaces with fewer than 50 employees. Small workplaces can be at a disadvantage in providing health promotion services, but many small businesses have successfully established programs with high participation rates. Factors contributing to program success in small businesses include: (1) using individualized risk assessment tools (e.g., a health risk appraisal instrument), (2) taking advantage of community agency programs tailored to small groups of employees, and (3) participating in cooperatives involving several small businesses to achieve economy in the purchase of services such as employee assistance programs, health insurance for preventive health services, and safety services. Employee involvement in defining and managing worksite health promotion activities can be especially valuable in addressing resource constraints among small employers while simultaneously enhancing program success.

8.7 Increase to at least 20 percent the proportion of hourly workers who participate regularly in employer-sponsored health promotion activities. (Baseline data available in 1992)

Hourly workers have greater health risks and higher rates of illness and injury than salaried workers. Contributing factors include socioeconomic differences, differences in the nature of the work performed, differences in having employer-sponsored health insurance, and the exclusion of hourly workers from worksite health promotion programs. This exclusion often occurs not by intent, but by failure to market the program to hourly workers. Most worksite statistics indicate that enrollees in worksite health promotion programs tend to be salaried employees whose general health is better than average. While reductions in health risks have been achieved in many worksite health promotion programs, risk reduction for hourly employees has lagged.

To encourage hourly workers to participate in worksite health promotion programs, it is generally agreed that: (1) a more pronounced linkage between occupational and lifestyle risks must be recognized; (2) hourly employees, and union members where appropriate, should be more strongly involved in the planning and operation of health promotion programs; and (3) providers of health promotion services at the worksite must provide services that will appeal to hourly workers and must be flexible in scheduling the use of services.

8.8 Increase to at least 90 percent the proportion of people aged 65 and older who had the opportunity to participate during the preceding year in at least one organized health promotion program through a senior center, lifecare facility, or other community-based setting that serves older adults. (Baseline data available in 1992)

One of the most dramatic demographic changes occurring in the United States is the aging of the population. By the year 2000, 13 percent of the population is expected to be aged 65 and older. Through the 1990s, the most rapid growth will be in the oldest-old group. Life expectancy at age 85 has increased 24 percent since 1960 and is projected to increase another 44 percent by 2040. In 1980, 1 percent of the population was aged 85 and older; by the year 2000, this age group will nearly double to 1.8 percent of the population.[27]

With the unprecedented gain in life expectancy comes an increased likelihood of suffering from chronic health problems. The chance of being limited in activity and in need of health and social services increases significantly for the oldest-old. The higher rates of morbidity in the 65 and older age group, however, also signal a greater opportunity for health promotion and disease prevention interventions. Although health behaviors and practices over the lifespan bear significantly on the status of health in later life, there is growing evidence that modification of certain harmful practices and behaviors at older ages can benefit health and quality of life.[13,18,24,26]

More than any other age group, older adults are actively seeking health information and are willing to make changes to maintain their health and independence.[23] Preventive efforts should be well-focused on modifiable risk behaviors and early diagnosis, matched to the leading problems by age (e.g., aged 60 or 65 through 74, 75 through 84, and 85 and older) and functional status.[24] Programs should address these health issues through multiple strategies—education, counseling, screening/chemoprophylaxis, and protective services. As with any successful program, those for older adults need to be tailored for the audience. A report on the national public education program, *Healthy Older People*, provides guidelines that can be applied in the development of health promotion programs for older adults.[23]

While schools are natural settings for reaching children and youth, and worksites reach the majority of adults, efforts to reach older adults must necessarily involve the community at large. Senior centers have been established in most communities and provide a range of services, including health promotion programs, for roughly 20 to 25 percent of older adults. Several types of housing arrangements designed specifically for older adults can also be found in many communities including congregate housing, lifecare facilities, and retirement villages. These usually offer some mix of health care, recreational programs, or other types of activities and services.

Clubs and organizations that meet regularly in the community are also potential channels for reaching older adults. Examples include corporate retiree clubs, fraternal organizations, church groups, and volunteer groups. As with other age groups, those people who may be at highest risk and most likely to benefit from an intervention are also the least likely to belong to clubs or participate in community activities. Social isolation itself can be an additional risk factor for health problems with older adults. Outreach activities through senior center programs that deliver services to people in their homes, or through senior volunteer groups, are examples of how such channels can be extended to reach older adults at high risk.

8.9 Increase to at least 75 percent the proportion of people aged 10 and older who have discussed issues related to nutrition, physical activity, sexual behavior, tobacco, alcohol, other drugs, or safety with family members on at least one occasion during the preceding month. (Baseline data available in 1991)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

The World Health Organization characterizes the family as the "primary social agent in the promotion of health and well-being."[31] The family, no matter how loosely defined—even as household—is a place where lifestyle patterns are initiated, maintained, and altered over time. It is where risk factors tend to cluster, and in most cases, members share a genetic history. It is the most basic consumer unit for foods, products, and services that influence health status. It is a major source of stress and social support.

In 1985, a Gallup survey demonstrated the influence of the family upon health-related behavior patterns. Gallup interviewed 1011 adults, asking them how they changed their behavior and who helped them change. They found that a spouse or significant other was more likely to influence a person's health habits than anyone else, including the family doctor. Husbands were twice as likely, for instance, to quit smoking (22 percent versus 11 percent) and more likely to lose weight (42 percent versus 31 percent) than single men.

Research on the family's impact on health provides empiric evidence that family patterns influence such conditions as coronary heart disease, hypertension, diabetes, substance abuse and mental disorders, anorexia nervosa, childhood illnesses, asthma, schizophrenia, and depression.[7]

8.10 Establish community health promotion programs that separately or together address at least three of the Healthy People 2000 priorities and reach at least 40 percent of each State's population. (Baseline data available in 1992)

Many of the behavioral and environmental factors associated with unnecessary loss of health or life are modifiable. Recent research and demonstration projects addressing chronic diseases indicate that the preventive approaches that hold the greatest promise are community-based, communitywide, and focus on both individual behavior and societal influences. Effective strategies will be those that are designed to influence not only the individual but the social norms that operate in the broader environment where people live and work. Social norms are shaped by a variety of institutions including educational institutions, religious institutions, courts and legislatures, and the media. To encourage and sustain health-promoting practices, the community should be actively engaged in creating an environment that supports individual action. The active involvement of many sectors in a community—the committed participation of schools, churches, worksites, government, business, health care, and voluntary agencies—increases the potential for sustained behavior change and positive health benefits.

A community health promotion program should include the following:

- Involved citizen participation with representation from at least three of the following community sectors: government, education, business, religion, health care, media, voluntary agencies, and the public;

- A community assessment to determine community health problems and resources;
- Measurable objectives that address at least one of the following: health outcomes, risk factors, public awareness, or services and protection;
- A monitoring and evaluation process to determine whether the objectives are reached; and
- Comprehensive, multifaceted, culturally relevant interventions that have multiple targets for change—individuals (minority/age groups), organizations (worksites, schools, churches), and environments (local policies/regulations)—and multiple approaches to change—education, community organization, and regulatory environment.

Community health promotion involves a new and complex technology. A growing number of States and organizations are assisting communities in establishing health promotion programs, but more resources and technical assistance are needed.

Special mention is warranted on the role of religious institutions in health promotion and disease prevention. Churches and other religious institutions exist in virtually all areas of the country, thus providing avenues whereby hard-to-reach populations may be more easily reached. Churches are often strong in the same communities where the health care system is weak and overburdened. In poor black communities, for example, the church has met not only the spiritual but also the educational, physical, and social needs of its members and their families and friends. Religious affiliations also provide common bonds for migrating population groups and others being introduced to a different community or culture. Often the church may be perceived as the only trustworthy institution for information and support.

Examples of social and health activities of religious groups abound in the United States and often reach abroad—e.g., efforts to reduce hunger, provide housing and shelter, perform medical and health care services, prevent stress and depression, counsel for emotional and mental health, and educate youth. However, health promotion has become a focus only recently. Increasingly, religious institutions are sponsoring health fairs and establishing blood pressure education, screening, and control programs. They have long offered individual and family counseling and are often involved in adolescent pregnancy prevention efforts. Increasingly, churches in minority communities are taking a leadership role in AIDS education and prevention. But the potential contribution that churches and other religious organizations can make to health promotion and disease prevention efforts is largely untapped.[29]

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

The U.S. population is composed of many diverse groups. Members of racial and ethnic minority groups account for one-fifth of the U.S. population and will constitute about 25 percent of the population by the year 2000. Blacks, Hispanics, Asians and Pacific Islanders, and Native Americans, the major racial and ethnic minority groups, also have great diversity within their groups. Members of ethnic and cultural minorities tend to cluster in communities that provide social support and maintain extended social networks. Blacks are most populous in the southeastern United States. Ninety percent of

Hispanics reside in nine States: California, Texas, New York, New Jersey, Florida, Illinois, Arizona, New Mexico, and Colorado. Seventy percent of the Asian and Pacific Islander population live in California, Hawaii, New York, Illinois, and Texas.

Minority and disadvantaged communities lag behind the overall U.S. population on virtually all health status indicators. The extent of this disparity and the consequent waste of human lives and productivity has been extensively chronicled.[16] An estimated 60,000 excess deaths occur among blacks, Hispanics, Asian and Pacific Islanders, and Native Americans annually.[25] (Excess deaths are defined as deaths that would not occur if mortality rates for minorities were the same as for nonminorities.) More than 80 percent of these excess deaths occur in six categories, all of which have contributing factors that can be controlled or prevented: cancer, heart disease and stroke, homicide and unintentional injuries, infant mortality, diabetes, and chemical abuse (primarily alcohol abuse).

Mainstream health education activities often fail to reach minority populations.[19] Special effort is needed to disseminate health information to these groups. Community-based health promotion and disease prevention programs for minorities are most effective if developed for and with the community.[19] Community participation in program planning and a thorough knowledge of the target community are essential for an effective program. Written and audiovisual materials should always be carefully tailored to the target population, and health messages should be conveyed in a manner that is compatible with existing beliefs. If suitable tools cannot be borrowed and adapted for community purposes, they must be developed for the particular population and problem being addressed. Assessment of the general educational level, literacy, and language preferences of the community should enable program planners to develop suitably worded messages. Levels of literacy should be assessed for both the preferred language, if one exists, and for English. Finally, appropriate communication channels should be identified and appropriate activities designed on the basis of local assessment.

8.12 Increase to at least 90 percent the proportion of hospitals, health maintenance organizations, and large group practices that provide patient education programs, and to at least 90 percent the proportion of community hospitals that offer community health promotion programs addressing the priority health needs of their communities. (Baseline: 66 percent of 6,821 registered hospitals provided patient education services in 1987; 60 percent of 5,677 community hospitals offered community health promotion programs in 1987)

Baseline data source: American Hospital Association Annual Survey.

Patient education services include a broad array of planned and coordinated inpatient and outpatient educational activities to "enable patients, and their families and friends, when appropriate, to make informed decisions about their health; to manage their illnesses; and to implement followup care at home."[3] Patient education programs for diabetes, asthma, and other conditions are valued by patients and can help to improve the efficiency and effectiveness of care. Patient education programs may reduce length of hospital stay, prevent hospital readmissions, and reduce emergency room visits.[8]

Both the American Hospital Association (AHA) and the American Public Health Association have defined three levels of patient education programming—the institution level, the target population level (e.g., people with diabetes), and the case or individual level.[5,10] From a management perspective, having an individual designated to coordinate a target population program is important for consistent implementation and quality assurance. Having a person designated to coordinate patient education at the institution level is associated with a wider variety of programs and increased consistency in program delivery.[28]

With one exception, all national surveys of hospital-based patient education programming have been conducted by the AHA. AHA's last comprehensive health promotion survey in 1984 documented that 3,391 (84 percent) of 3,565 responding hospitals offered at least one inpatient education program, and 3,249 (77 percent) offered at least one outpatient education program.[4] A more recent streamlined survey documented similar results: 87 percent of 3,237 responding hospitals offered inpatient education services, and 73 percent offered outpatient education services.[2] The AHA Annual Survey, however, which provides data for all (6,821) registered hospitals, showed 61 percent reporting patient education services in 1986 and 66 percent in 1987.[1]

In addition to patient education services, hospitals commonly offer community health promotion programs. With community health promotion defined most recently by AHA as "education and other support programs designed to improve the health and well-being of community members,"[2] AHA's health promotion survey data show a stable percentage of hospitals reporting this type of service: 74 percent of respondents in 1984 and 73 percent in 1987.[4] Overlap between community health promotion and outpatient education, however, is evident. For example, in 1984, 32 percent of respondents offered prenatal education as outpatient education, and 38 percent considered it community education. Veterans Administration hospitals were the least likely to offer community health promotion services but among the most likely to offer patient education. Army, church-operated, and other nonprofit hospitals were the most likely to offer community health promotion services. The AHA Annual Survey tracking data show an increasing but somewhat lower percentage of community hospitals with community health promotion services: 55 percent in 1986 and 60 percent in 1987.[1]

8.13 Increase to at least 75 percent the proportion of local television network affiliates in the top 20 television markets that have become partners with one or more community organizations around one of the health problems addressed by the Healthy People 2000 objectives. (Baseline data available in 1991)

Television has become the most popular mass medium and the public's primary source of information. Over the past decade, public health education campaigns have relied heavily on the use of television public service announcements to convey health messages. In addition, local and national news programs have increased their health coverage as AIDS, drugs, and other health problems have become national priorities. But the purpose of television is to inform and entertain, not educate. Increased airtime devoted to health-related issues has not translated directly into an improved understanding of the benefits of health promotion and disease prevention, nor the adoption of risk reduction behaviors. Large segments of the population are confused or overwhelmed by what is perceived as conflicting or complicated information.

Empiric studies of health communication programs have shown that mass media is most effective when combined with community-based programs.[22] Such strategies reinforce the health information delivered through the media with programs, policies, and services that support individual, as well as collective, changes in health behaviors and practices. As a result, partnerships with media and community organizations, businesses, schools, churches, and others are being formed around health issues. Although public service airtime may be donated by the local television station as a contribution to the coalition, media partners often produce special programs on the health problem, sponsor community-based activities to support the effort, and provide media personalities to serve as spokespeople at special events.

During the 1987-88 season, the top 20 television markets reached 73,758,100 Americans aged 12 and older and comprised 49.4 percent of the total national market according to Arbitron Company data. Ranked in descending order by number of television homes, the top 20 markets are New York, Los Angeles, Chicago, Philadelphia, San Francisco, Boston, Detroit, Dallas-Fort Worth, District of Columbia, Houston, Cleveland, Atlanta, Minneapolis-St. Paul, Miami, Seattle-Tacoma, Pittsburgh, Tampa-St. Petersburg, St. Louis, Denver, and Phoenix.

8.14 Increase to at least 90 percent the proportion of people who are served by a local health department that is effectively carrying out the core functions of public health. (Baseline data available in 1992)

Note: The core functions of public health have been defined as assessment, policy development, and assurance.[17] *Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.*

The Institute of Medicine (IOM) Report *The Future of Public Health* acknowledged past public health successes but described in detail problems within the U.S. public health system.[17] The AIDS epidemic, which threatens the health of millions of Americans, has also brought the inadequacies of our public health system into high visibility. That same system is in critical need of improvement if the Nation is to address not only AIDS, but the burden of chronic diseases in our aging population and injuries and violence to our young. Both the Presidential Commission on HIV Infection and the IOM report outline steps necessary to strengthen the public health system and call for a plan of action for improvements. The desired outcome is a public health system effectively performing the core functions of public health agencies, which the IOM report identifies for all levels of government as assessment, policy development, and assurance. Specifically, public health agencies should (1) regularly and systematically collect, assemble, analyze, and make available information on the health of the community (i.e., assessment); (2) exercise their responsibility to serve the public interest in the development of comprehensive public health policies by promoting the use of the scientific knowledge base in decision-making (i.e., policy development); and (3) assure their constituents that services necessary to achieve agreed-upon goals are provided by encouraging actions of others (private and public), requiring action through regulation, or providing services directly (i.e., assurance).

The current public health system is built around governmental agencies—primarily Federal, State, and local health departments. Approximately 94 percent of the population is presently served by a State or local health department, but the number, quality, and effectiveness of the services provided varies greatly. Other critical participants in the system include clinical medicine, voluntary agencies, schools and universities, business and industry, professional associations, community organizations, and third-party payers. A governmental presence is needed at the local level to provide leadership in identifying and prioritizing community health problems and coordinating the efforts of the various private and public sector participants to assure that necessary health promotion and disease prevention services are provided. Consensus must be developed and institutionalized on the appropriate roles, attributes, and standards of effective performance of all parties within the public health system to fully realize the benefits of effective public health practice.

The public health community has recognized these problems and has initiated three landmark actions that have helped focus opinion on the need for definition and consensus with respect to the public health system. In 1979, the publication of *Model Standards: A Guide for Community Preventive Health Services* advanced the concept of a governmental presence at the local level to assure the public's health.[6] In 1987, the National Association of County Health Officials entered into a cooperative agreement with CDC entitled APEX/PH (A Protocol for Excellence in Public Health). This protocol will provide a process by which local health authorities determine their specific community-based roles, assess their internal capacities, and provide direction to their efforts. In 1988, *The Future of Public Health* proposed the core functions of public health.[17]

In addition, the 1990 objectives played a most significant role by providing direction and focus to the health promotion and disease prevention efforts of the public health system. However, the objectives did not specifically address the inadequacies in the system itself that might adversely affect their achievement. A public health system effectively carrying out the core functions will assure that scarce public health resources are directed to address identified health problems of high priority. If achievement of the year 2000 objectives is to be a reality, there must be a public health system with the capacity to carry out the necessary strategies. This cross-cutting objective helps to assure the existence, effectiveness, and appropriate distribution of that capacity.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the objectives addressing educational and community-based programs over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the objectives addressing educational and community-based programs.
- Provide sufficient, appropriate curricular content in health promotion, health protection, and disease prevention in all schools and programs preparing students for careers in the health professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Provide sufficient, appropriate curricular content in health promotion, health protection, and disease prevention in all schools and programs preparing students for careers in education and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on health promotion, health protection, and disease prevention by national professional associations whose members have roles in health promotion, health protection, and disease prevention.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 8.2 and 8.12.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 8.1, 8.4, 8.6, 8.7, 8.8, and 8.9.

New surveillance systems are needed to track Objectives 8.3, 8.5, 8.10, 8.11, 8.13, and 8.14.

High Priority Needs

- Periodic assessment of priority health risks among adolescents to determine whether they are increasing, decreasing, or remaining the same. State-based systems are needed to monitor the percentage of secondary school students (aged 13 through 18) who engage in health risk behaviors for each 1-year age group, each gender, and each racial/ethnic group.
- Surveillance systems to monitor the percentage of schools that provide planned and sequential kindergarten through 12th grade quality school health education.
- Surveillance systems to monitor the percentage of school districts requiring certification in school health education as a requirement for teaching health education.
- Surveillance systems to monitor the existence, the coverage, and the quality of worksite health promotion programs and community health promotion programs.

In addition to national data, State and local data are needed for all of the above.

A national information data base is needed to measure the capacity and the performance of the public health delivery system. Additionally, and of equal importance, is the establishment of standards of capacity and performance against which effectiveness can be assessed. Certain key attributes should be present and measurable in any functioning system. These attributes include the ability to:

- assess the overall public health status and self-perceived needs of the residents;
- prioritize and select the areas of need for which intervention programs should be implemented, continued, or expanded;
- establish specific and measurable long-term program objectives, which can be compared with the relevant national health objectives;
- develop appropriate strategies and plans for achieving the program objectives;
- determine the organizational capacities and resources needed to address those public health needs;
- recruit, hire, train, and retain the staff needed to effectively carry out the plans;
- obtain necessary funds and other resources on an ongoing basis; and
- evaluate progress toward accomplishing program objectives, making adjustments in objectives and program plans as necessary.

Tracking these indicators of the public health delivery system would identify gaps in the system that are amenable to intervention and assure that the public health system possesses the capacity to achieve the year 2000 national health promotion and disease prevention objectives.

A critical problem is the lack of comprehensive and reliable data on the public health workforce. Few definitive statements can be made about personnel utilization, shortage areas, and training needs. One major difficulty is the absence of standard definitions for many occupational categories. Even given established credentials, as in the case of board certification for preventive medicine physicians, reporting is inconsistent (e.g., on some occasions only board-certified preventive medicine physicians are counted, and on other occasions all physicians who state their specialty as preventive medicine are counted). Precise definitions need to be formulated and used consistently to make quantification of the public health workforce possible.

Research Needs

High priority research needs in health promotion include:

- Research into the factors influencing health-related behavior change.
- Evaluation of the degree to which health promotion in schools, communities, health care facilities, worksites, and religious institutions changes lifestyle choices, and the consequent changes in health status, health service use, productivity, and economic costs to society.
- Studies to delineate the most effective elements of intervention strategies carried out in schools, worksites, community-based programs, and health care settings.
- Investigation of the ways changes in the external social environment reinforce and/or interact with health promotion and education strategies.
- Research into reasons people change or do not change behavior related to health as a result of exposure to health promotion programs.
- Further research on worksite programs, particularly more studies of programs in new and emerging service industries and small business and programs that use the worksite to reach not only workers but their families, retirees, and the community at large.
- Research in health promotion for special worker populations such as women, older adults, and minority groups who are entering the workforce in increasing numbers. Also, hourly employees who are often passed by in traditional approaches. Research is needed on what encourages hourly workers to heed educational messages and to take part in health-enhancing activities, and how to create a supportive work environment conducive to good health choices.
- Research to understand aging processes and how aging is distinct from disease, in order to better understand which age-related changes are inevitable and which are open to modification.
- Research in the areas of primary and secondary prevention for older adults to identify ways to maintain health, independence, and function into later years.
- Research to learn more about when preventive interventions can still be effective in either preventing the onset or ameliorating the course of disease, and which outcomes have the greatest impact on functional independence and quality of life of older adults.
- Operational research in local public health (e.g., strategic and capacity-building planning models, specification of core community services, and alternatives for organizing and delivering community programs).

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.8 Daily school physical education

1.9 School physical education quality

1.10 Worksite fitness programs

1.11 Community fitness facilities

Nutrition

2.17 Nutritious school and child care food services

2.19 Nutrition education in schools

2.20 Worksite nutrition/weight management programs

Tobacco

3.10 Tobacco-use prevention education and tobacco-free schools

3.11 Worksite smoking policies

3.12 Clean indoor air laws

Alcohol and Other Drugs

4.13 Alcohol and drug education in schools

4.14 Worksite alcohol and drug policies

Family planning

5.8 Family discussion of human sexuality

Mental Health and Mental Disorders

6.11 Worksite stress management programs

6.12 Mutual help clearinghouses

Violent and Abusive Behavior

7.16 Conflict resolution education in schools

7.17 Comprehensive violence prevention programs

Unintentional Injuries

9.18 Injury prevention instruction in schools

Occupational Safety and Health

10.6 Worksite occupant protection system mandates

10.10 State occupational health and safety plans

10.12 Worksite health and safety programs

10.13 Worksite back injury prevention and rehabilitation programs

10.14 State programs for small business safety and health

Heart Disease and Stroke

15.16 Worksite blood pressure/cholesterol education programs

Diabetes and Chronic Disabling Conditions

17.14 Patient education for chronic and disabling conditions

17.19 Employment of people with disabilities

HIV Infection

18.10 HIV education in schools

18.11 HIV education in colleges and universities

Sexually Transmitted Diseases

19.12 Sexually transmitted disease education in schools

Surveillance and Data Systems

22.4 Gaps in health data

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Unintentional Injuries

9

9. Unintentional Injuries

Introduction

Unintentional injuries constitute the fourth leading cause of death in the United States, killing approximately 100,000 people each year. During the first four decades of life, unintentional injuries claim more lives than infectious or chronic diseases. In 1987, 2.3 million years of life were prematurely taken by unintentional injuries, more than from any other cause. Motor vehicle crashes account for approximately half the deaths from unintentional injuries; falls rank second, followed by poisoning, drowning, and residential fires.[3]

Additional millions are incapacitated by unintentional injuries, with many suffering lifelong disabilities. These events occur disproportionately among the young and older people. Injuries generate huge problems in lost productivity and medical care costs. Nonfatal injuries account for 1 in every 6 hospital days and 1 in every 10 hospital discharges. Overall, estimated total lifetime costs of all injuries in 1985 exceeded $158 billion.[41] Unintentional injuries account for about two-thirds of these costs.

Several themes become evident when examining the body of knowledge on injury prevention and control, including acute care or treatment and rehabilitation. First, unintentional injury comprises a family of complex problems involving many different sectors of society. No single force working alone can accomplish everything needed to reduce the number of injuries. Improvement requires the combined efforts of many fields, including health, education, transportation, law, engineering, architecture, and safety sciences.

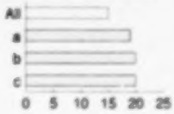
Second, alcohol use is intimately associated with the causes and severity of many unintentional injuries. Efforts to reduce death and disability from unintentional injuries must be combined with efforts to reduce alcohol and other drug abuse (See *Alcohol and Other Drugs*). Many of the factors that cause unintentional injuries are also closely associated with violent and abusive behavior. Injury prevention and control addresses both unintentional and intentional injuries. Therefore, national objectives to reduce death and disability resulting from injuries must include both the objectives in this chapter and those in the chapter on violent and abusive behavior.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

9.1 Reduce deaths caused by unintentional injuries to no more than 29.3 per 100,000 people. (Age-adjusted baseline: 34.5 per 100,000 in 1987)

Special Population Targets

	Deaths Caused by Unintentionial Injuries (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
9.1a	**American Indians/Alaska Natives**	**82.6**	**66.1**	
9.1b	**Black males**	**64.9**	**51.9**	
9.1c	**White males**	**53.6**	**42.9**	

Baseline data source: National Vital Statistics System, CDC.

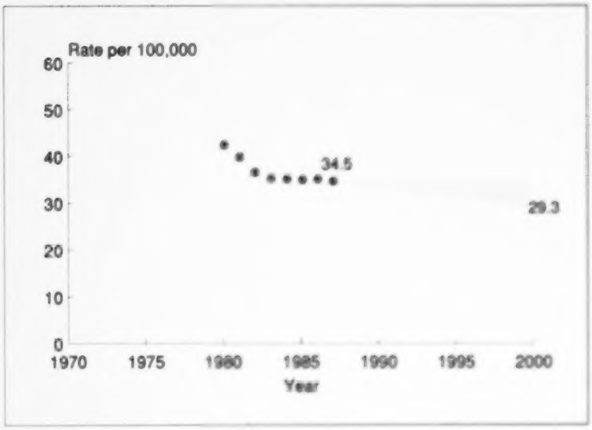


Fig. 9.1

Age-adjusted unintentional injury death rate

Nearly two-thirds of all injury deaths involve unintentional injuries.[41] Males are more likely to experience unintentional injuries than females and are 2.5 times more likely to die from them. Higher death rates from unintentional injury occur among blacks than among whites over the entire age range[15] with black males generally having the highest death rates. America Indians and Alaska Natives have disproportionately higher death rates from motor vehicle crashes, residential fires, and drowning.[17] American Indian death rates are about 2.5 times higher than the overall U.S. population rate; in certain geographic areas (e.g., Western U.S. reservation States) the rate is even higher. Reduction in deaths caused by unintentional injuries require preventive interventions directed at the leading causes of those injuries, each of which are the topics of objectives in this priority area.

9.2 Reduce nonfatal unintentional injuries so that hospitalizations for this condition are no more than 754 per 100,000 people. (Baseline: 887 per 100,000 in 1988)

Baseline data source: National Hospital Discharge Survey, CDC.

Unintentional injuries account for 84 percent of injury-related hospitalizations.[41] They result in an estimated $108 billion in lifetime medical costs. (A lifetime cost is defined as the total cost of an injury from onset until either complete cure or death.[41]) These costs are distributed as follows: 33 percent from falls, 28 percent from motor vehicle crashes, 4 percent from poisonings, 2 percent from fires/burns, 2 percent from firearms, and 31 percent from other causes. With the exception of firearms, poisonings, and drownings, the costs associated with nonfatal injuries are far greater than those associated with deaths.[49]

Biomechanics research and epidemiologic studies of unintentional injuries have provided and will continue to provide the basis for prevention efforts. Using familiar public health epidemiologic categories, it is possible to use knowledge about host, agent, the environment, and mechanisms for intervention to develop sound prevention programs that reduce unintentional injury. By using broad-based mixed strategies, serious injuries from motor vehicle crashes, injuries where alcohol is an important factor, and injuries occurring in the home and workplace can be substantially reduced.[46]

9.3 **Reduce deaths caused by motor vehicle crashes to no more than 1.9 per 100 million vehicle miles traveled and 16.8 per 100,000 people. (Baseline: 2.4 per 100 million vehicle miles traveled (VMT) and 18.8 per 100,000 people (age adjusted) in 1987)**

Special Population Targets

	Deaths Caused by Motor Vehicle Crashes (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Change*
9.3a	**Children aged 14 and younger**	6.2	5.5	
9.3b	**Youth aged 15-24**	36.9	33	
9.3c	**People aged 70 and older**	22.6	20	
9.3d	**American Indians/Alaska Natives**	46.8	39.2	

Type-Specific Targets

	Deaths Caused By Motor Vehicle Crashes	*1987 Baseline*	*2000 Target*
9.3e	**Motorcyclists**	**40.9/100 million VMT & 1.7/100,000**	**33/100 million VMT & 1.5/100,000**
9.3f	**Pedestrians**	**3.1/100,000**	**2.7/100,000**

Baseline data sources: Fatal Accident Reporting System (FARS), U.S. Department of Transportation; for American Indians/Alaska Natives, National Vital Statistics System, CDC.

Motor vehicle-related fatalities account for about half of all unintentional injury deaths and are the leading cause of work-related injury deaths. Approximately 46,000 people die each year and more than 3.5 million are injured. Society loses nearly $75 billion annually as the result of motor vehicle crashes.[30]

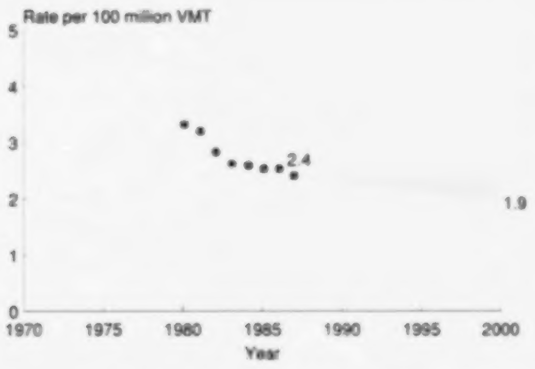


Fig. 9.3i

Motor vehicle crash death rate per 100 million vehicle miles traveled

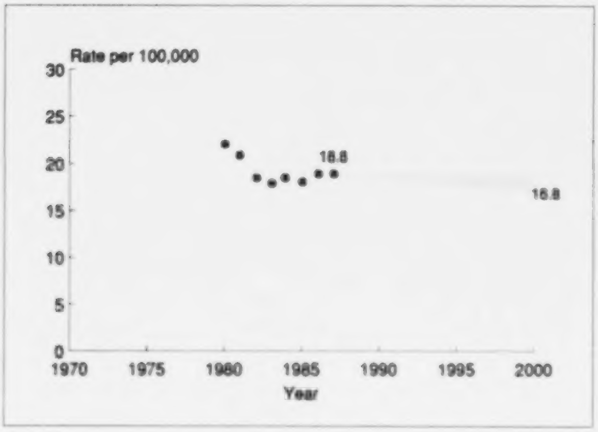


Fig. 9.3ii

Age-adjusted motor vehicle crash death rate per 100,000 people

This objective includes rates for deaths per 100,000 population and deaths per million VMT. Population-based rates can misrepresent the impact of highway safety measures because they do not measure exposure to crash risk. As the number of miles driven increases, the risk of a crash increases. Therefore, the VMT-based death rate provides a more accurate measure of motor vehicle safety. Population rates, however, are important in describing motor vehicle crash injury as a public health problem, particularly for the high-risk groups, such as young adults, for whom VMT rates are not available. Deaths from off-road vehicle (all-terrain vehicles, trail bikes, snowmobiles) crashes are not included in this objective because the hazards encountered on these vehicles are very different from those of on-road vehicles. Furthermore, because registration of off-road vehicles or their riders is not uniformly required, data on VMT or number of users are not routinely available.

The year 2000 target rates were established after considering recent trends in the death rate, the impact of future automatic occupant protection systems, and anticipated demographic changes. Reduction of the overall death rate will depend upon several factors, including use of mass transit, continued reductions in drunk driving, and improvement of pedestrian, motorcycle, and bicycle safety.

Motorcycle, pedestrian, and bicycle casualties account for almost 30 percent of motor vehicle deaths each year. Motorcycle crashes cause approximately 11 percent of all motor vehicle deaths. Many motorcycle crash injuries are due to lack of operator skill, intoxication of the operator, and absence of protective headgear.[31] Countermeasures, including use of motorcycle helmets, are strongly associated with decreased death and injury.[32] An increase in alcohol/drug use prevention and deterrence activities is also associated with decreased death and disability.

Motor vehicle crashes involving pedestrians have steadily declined over the past 50 years to a low of 6,746 deaths in 1987. Nonetheless, pedestrians account for 14.5 percent of all motor vehicle-related fatalities, and alcohol is associated with close to 50 percent of pedestrian deaths.[39] Safety programs directed at youthful pedestrians have been shown to be effective and may be partly responsible for the 24-percent decline in deaths of children less than 15 years old between 1980 and 1986.[33]

As older adults (aged 70 and older) become a larger percentage of the population, they represent an increasing proportion of the licensed and driving population. They also account for a larger share of the motor vehicle injury problem each year. Older people have a greater risk of crash per mile driven than younger adults, and once in a crash, they are much more vulnerable to injury and death. Fatal injuries among this group frequently do not result in immediate death, but rather occur only after lengthy and costly treatment. It is, however, extremely important to the overall health and welfare of this age group that they be able to maintain their mobility. Prevention efforts among this group can include improvement in vehicle and highway design, appropriate licensing programs, pedestrian walkways for older users, adequate time on pedestrian crossing signals, and occupant restraint systems designed for frail older adults.

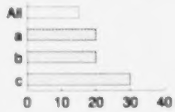
Speed is a fundamental factor in the physical forces involved in crashes.[8] Highway speed enforcement efforts have generated significant yearly increases in speeding citations, yet speed continues to rise. Law enforcement agencies have not been able to keep pace with the increased demands of traffic. In the future, law enforcement needs a comprehensive approach, including improved public information and education efforts, expanded public and private support, and new strategies such as the legal prohibition of radar detectors, as well as carefully monitored speed limits. Improved motor vehicle technology, such as antilock braking systems, side impact protection, and modification of the highway environment by the elimination of roadside and roadway hazards also offers important preventive measures.[42]

9.4 Reduce deaths from falls and fall-related injuries to no more than 2.3 per 100,000 people. (Age-adjusted baseline: 2.7 per 100,000 in 1987)

Special Population Targets

	Deaths From Falls and Fall-Related Injuries (per 100,000)	*1987 Baseline*	*2000 Target*
9.4a	**People aged 65-84**	18	14.4
9.4b	**People aged 85 and older**	131.2	105.0
9.4c	**Black men aged 30-69**	8	5.6

Percent Decrease



Baseline data source: National Vital Statistics System, CDC.

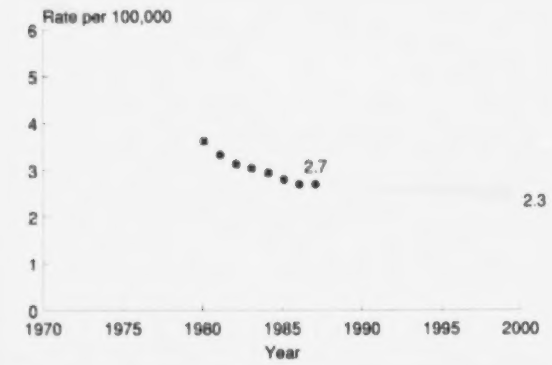


Fig. 9.4

Age-adjusted death rate from falls and fall-related injuries

Falls and fall-related injuries occur at every age, but the greater severity of injuries in old age combined with longer recovery periods makes falls particularly serious threats to the health and functioning of older people. Falls are the leading cause of death from injury for people aged 65 and older and are particularly common among those who are over age 85. Although 11,733 deaths were attributed to falls and fall-related injuries in 1987, the actual number of deaths in which a fall was a contributing factor may be much higher. While most falls do not result in serious physical injuries or death, they are often associated with loss of confidence in ability to function independently; restriction of physical and social activities; speech, language, and cognitive disorders; increased dependence; and increased need for long-term care.[11]

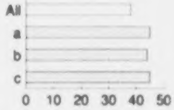
While fall-related death rates for children are relatively low in comparison with rates for older adults, fall-related disability is a significant problem in childhood.[10,44] Prevention strategies, including safe playground equipment and protective bars on upper story windows, have proven effective for reducing falls at the youngest ages.[5,48]

White males have higher death rates from falls than white females at all ages, while black males in the middle years (35-60) have higher rates than white males of the same age, which may be associated with the nature of their jobs or environmental conditions.[23] The black/white ratio also varies by specific age category.

9.5 Reduce drowning deaths to no more than 1.3 per 100,000 people. (Age-adjusted baseline: 2.1 per 100,000 in 1987)

Special Population Targets

	Drowning Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
9.5a	**Children aged 4 and younger**	4.2	2.3	
9.5b	**Men aged 15-34**	4.5	2.5	
9.5c	**Black males**	6.6	3.6	



Baseline data source: National Vital Statistics System, CDC.

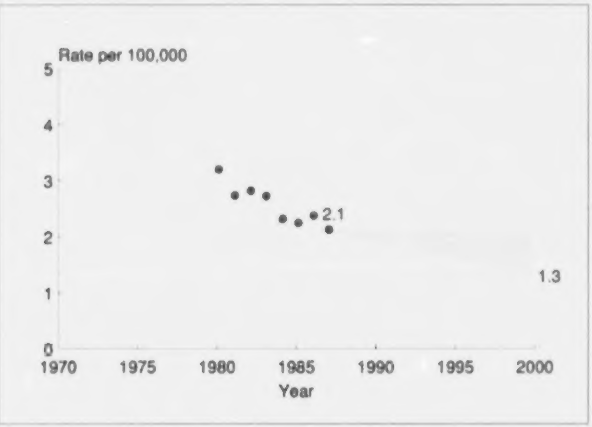


Fig. 9.5

Age-adjusted drowning death rate

Drowning rates dropped considerably between 1979 and 1987, when 5,100 people drowned in the United States, placing it second among unintentional injuries in years of potential life lost. Those at highest risk include males, children less than 5 years old, blacks, American Indians, and some occupational groups.[13] The highest drowning rates are among children aged 4 and younger and men aged 15 through 34.[36] Rates are consistently higher among black men than among white men.[13]

The causes of the remarkably high rate of drowning by black males are unknown and virtually unstudied. Epidemiologic research and surveillance should be attempted to improve understanding of the causes and mechanisms of drowning by black males so that appropriate interventions can be developed and evaluated. The projected 45-percent reduction of drowning in this group assumes that feasible interventions will be identified.

Causes of drowning for men aged 15 through 34 are multiple, but appear to center around boating and water activities and alcohol use combined with these activities. All States and territories currently have laws to prohibit operating a boat under the influence of alcohol or drugs, but stronger regulations and enforcement are needed to reduce the deaths in this age group. Public awareness of the importance of encouraging safe operating practices and discouraging alcohol use are also potentially effective measures.

This objective is based on a projected reduction of 50 percent from drowning in swimming pools and a reduction of 33 percent from boating activities.[37,26] Potentially effective strategies, such as four-sided fencing, alarms, properly designed pool covers, and safety regulations are available to prevent pool drowning by preschool children. These strategies are difficult to implement and monitor because of the more than 40,000 local jurisdictions.

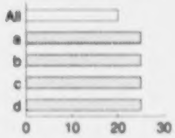
Reductions in drowning rates between 1979 and 1987 may represent an increased number of near-drowning victims. The rates of near drowning where victims are left with permanent neurologic damage are unknown. Epidemiologic surveillance and followup of near-drowning cases are needed to determine the true magnitude of the problem. Although intervention strategies have been developed to decrease drowning deaths, research is needed to evaluate the effectiveness of such strategies, including widespread cardiopulmonary resuscitation (CPR) training, expanded implementation of emergency medical services (EMS) protocols, and expanded availability of regional intensive care facilities.

9.6 Reduce residential fire deaths to no more than 1.2 per 100,000 people. (Age-adjusted baseline: 1.5 per 100,000 in 1987)

Special Population Targets

	Residential Fire Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
9.6a	**Children aged 4 and younger**	4.4	3.3
9.6b	**People aged 65 and older**	4.4	3.3
9.6c	**Black males**	5.7	4.3
9.6d	**Black females**	3.4	2.6

Percent Decrease



Type-Specific Target

		1983 Baseline	*2000 Target*
9.6e	**Residential fire deaths caused by smoking**	17%	5%

Baseline data sources: National Vital Statistics System, CDC; National Fire Incident Reporting System, Federal Emergency Management Agency.

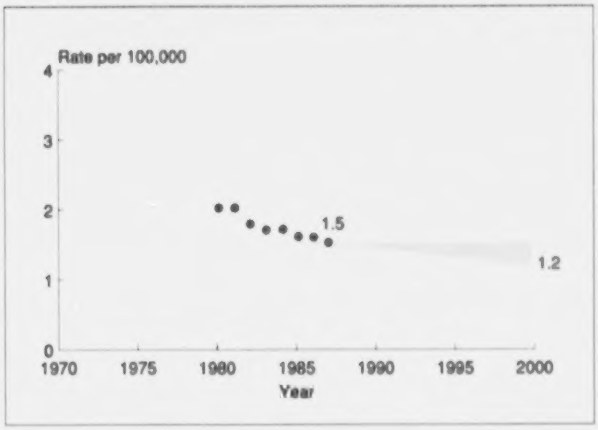


Fig. 9.6

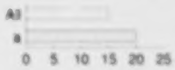
Age-adjusted residential fire death rate

Residential fires account for 75 to 80 percent of all fire deaths and are the fourth leading cause of unintentional injury deaths. Direct causes of fire-related death include burns, asphyxiation, and traumatic injuries sustained by firefighters. Subsequent infection of a burn injury is an indirect cause of fire death. Fire-related injuries, particularly burns, are complex to treat, carry higher risks, and require longer hospitalization than other types of injuries. Burn injuries also cause more intense and more prolonged suffering than other traumas.

Residential fires claimed 4,274 people in 1987. Children aged 4 and younger and people aged 65 and older have unusually high death rates, and higher rates are also observed for men, blacks, American Indians, and the poor.[14] Those who live in substandard housing without smoke detectors are often at the highest risk of fire death. Cigarette-ignited fires cause about 7 percent of all residential fires but 17 percent of the fatal fires. Many fires start when cigarettes continue to burn after being dropped or set down and ignite upholstery, bedding, or clothing. Strategies to reduce smoking and alcohol abuse will contribute to achieving this objective, as would the introduction of cigarettes designed not to ignite furnishings and child-resistant cigarette lighters, technologies that have been tested and found feasible.[54] Improved public awareness of home fire safety measures, including functional smoke detectors and home evacuation plans, and greater fire safety of products can contribute to reduced home fire deaths and disabilities.

9.7 Reduce hip fractures among people aged 65 and older so that hospitalizations for this condition are no more than 607 per 100,000. (Baseline: 714 per 100,000 in 1988)

Special Population Target

	Hip Fractures (per 100,000)	*1988 Baseline*	*2000 Target*	*Percent Decrease*
9.7a	**White women aged 85 and older**	2,721	2,177	

Baseline data source: National Hospital Discharge Survey, CDC.

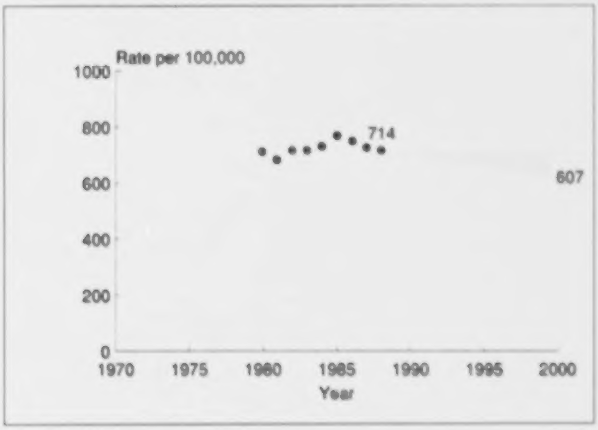


Fig. 9.7

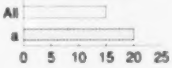
Hip fracture rate among people aged 65 and older

Hip fractures pose a serious public health problem, with more than 200,000 occurring each year and estimated medical care costs exceeding $7 billion.[56] Risk factors commonly associated with hip fractures include osteoporosis, advanced age, white race, use of psychotropic drugs, and being female.[7] Although hip fractures typically result in hospitalization, caution is needed in assessing the incidence from hospital discharge records, since some cases may be readmissions for additional treatment or transfers from one medical setting to another. Older men, too, are at high risk of hip fracture. The National Hospital Discharge Survey indicates that age-adjusted incidence rates for hip fractures have actually been increasing recently for men and women.[43]

There is some evidence that diet, exercise, and estrogen replacement therapy can reduce risks for women.[11] Less is known about the success of biomedical, behavioral, and environmental interventions in the lives of very old people. Whereas older women are already recognized as a high-risk group, the greater increases in age-specific fracture rates among men relative to women suggest the need for special intervention strategies targeted toward older men who have traditionally been neglected in efforts to reduce hip fractures.[43]

9.8 Reduce nonfatal poisoning to no more than 88 emergency department treatments per 100,000 people. (Baseline: 103 per 100,000 in 1986)

Special Population Target

	Nonfatal Poisoning (per 100,000)	*1986 Baseline*	*2000 Target*	*Percent Decrease*
9.8a	**Among children aged 4 and younger**	**650**	**520**	

Baseline data source: National Electronic Injury Surveillance System, Consumer Product Safety Commission.

Poisoning by solids and liquids and poisoning by gases are two distinct subcategories within the category of poisoning. The recent histories of these two subcategories are very different. The very young have been the subject of extensive poison prevention activities for solids and liquids, but deaths from solids and liquids have increased in recent years to a 1987 age-adjusted rate of approximately 1.7 per 100,000 people. At the same time, deaths from gases have been declining and reached an all-time low in 1987 of 0.4 per 100,000 population.[5]

Men aged 25 through 44 appear to be most responsible for the increase in poisoning by solids and liquids, with a substantial number of deaths as a result of poisoning from illicit drugs (see *Alcohol and Other Drugs*).

While mortality associated with poisoning of children less than 5 years old has declined and is quite low, morbidity is still alarmingly high. In 1987, there were over 107,000 children under 5 years of age treated in hospital emergency departments for poisoning. Approximately 700,000 poison exposures involving children in this age group were reported to poison control centers during the same year.[24]

Past actions such as the Poison Prevention Packaging Act (PPPA), the annual poison prevention week, the shift to less toxic fuels (natural gas and LP gas) for cooking and heating, and safety standards for products that release combustion byproducts have all helped to reduce the risk of poisoning.

Prescription drugs and some other hazardous materials are sold primarily in child resistant containers as required by the PPPA. Improved enforcement of PPPA provisions on dispensing of medicines by pharmacists and physicians involving State, local, and Federal authorities should help to improve enforcement and reduce poisoning morbidity. Improvements in child resistant containers should be sought so they can be more readily used by older people than current containers.

People aged 65 and older have the second highest death rate from poisoning. Drug interactions, inadvertent overdoses, and deliberate overdoses may cause lethal ingestion. Better knowledge of details about this cause of injury will allow communities to develop targeted interventions.

The public needs to be informed of the potential for household poisoning, especially when children visit households where poisons have not been adequately secured.

Broader dissemination of poison prevention messages and development of new poison prevention strategies are needed.

9.9 Reduce nonfatal head injuries so that hospitalizations for this condition are no more than 106 per 100,000 people. (Baseline: 125 per 100,000 in 1988)

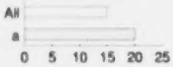
Baseline data source: National Hospital Discharge Survey, CDC.

Head injuries are the most common severe disabling injuries in the United States. Approximately 500,000 new cases occur annually. Local studies report rates between 180 and 500 per 100,000 people requiring hospitalization because of head injuries. The physical and emotional toll associated with these injuries can be enormous for the survivors and their families. People with existing disabilities from head injuries are at high risk for further secondary disabilities.[9] Prevention efforts should target motor vehicle crashes, falls, diving and water safety, and violence (suicide and assault), which are the most common underlying causes.[20]

Serious limitations in head injury data have been a barrier to prevention efforts. These include complex problems of defining injury criteria, outcome measures, and severity scaling. To adequately measure this objective, standardized definitions and data elements are needed.

9.10 Reduce nonfatal spinal cord injuries so that hospitalizations for this condition are no more than 5 per 100,000 people. (Baseline: 5.9 per 100,000 in 1988)

Special Population Target

	Nonfatal Spinal Cord Injuries (per 100,000)	*1988 Baseline*	*2000 Target*	*Percent Decrease*
9.10a	**Males**	8.9	7.1	

Baseline data source: National Hospital Discharge Survey, CDC.

Spinal cord injuries are catastrophic health events resulting in enormous human and economic costs. Estimates of spinal cord injury in the United States range from 2.8 to 5 per 100,000 people. Approximately 40 percent of spinal cord injuries are fatal, but data on spinal cord injuries in people dying prior to receiving treatment are inadequate.[22] Males sustain about 80 percent of spinal cord injuries. Adolescents and young adults (aged 15 through 24) are at highest risk of spinal cord injuries, which result in lifelong needs for special services and reduced potential for employment.[21]

Motor vehicle crashes are the primary cause of spinal cord injuries in the United States, accounting for about 50 percent of the cases.[2] Falls are the second leading cause,[50] followed by diving. In some urban settings, firearms and assaults are the major causes.[12]

The development, implementation, and evaluation of effective prevention strategies have been limited by a lack of adequate data. To accurately measure this objective, a standardized case definition and a minimum data set are needed for public health surveillance. States can make spinal cord injuries a reportable health condition.

Some spinal cord injuries occur after contact with the health care system. Appropriate handling of injured persons by medical care personnel will reduce the incidence of these injuries. Proper handling will also avoid more severe injury to those already injured. Increasing the awareness of emergency medical service personnel and others should be a priority for training programs and other injury prevention programs.

9.11 Reduce the incidence of secondary disabilities associated with injuries of the head and spinal cord to no more than 16 and 2.6 per 100,000 people, respectively. (Baseline: 20 per 100,000 for serious head injuries and 3.2 per 100,000 for spinal cord injuries in 1986)

Baseline data source: National Head and Spinal Cord Injury Survey, CDC.

Note: Secondary disabilities are defined as those medical conditions secondary to traumatic head or spinal cord injury that impair independent and productive lifestyles.

Injuries to the central nervous system, such as spinal cord injury and traumatic brain injury, are often associated with significant physical, neuropsychological, and psychosocial impairments that result in long-term disability and the need for extensive treatment and rehabilitation. Nearly all of the estimated 8,000 people with spinal cord injuries and 10 percent of the 500,000 people with traumatic brain injuries that occur annually experience secondary complications and disability as a result of their injuries.[18]

Secondary complications of spinal cord and traumatic brain injuries include bladder and urinary tract infections, pressure sores (decubitus ulcers), and respiratory tract problems. While these secondary disabilities are not usually fatal, they impair independent living and are costly to treat. For instance, each decubitus ulcer may result in treatment costs of over $58,000.[35]

Strategies to prevent the occurrence of secondary disabilities and to reduce their severity can be implemented in organized systems of care that include nonhospital settings, such as outpatient clinics or homes. People with spinal cord injuries treated in hospitals that are part of organized systems of treatment and rehabilitation have a lower incidence of complications than those treated in hospitals that are not part of such a system.[41] Similar reductions of the incidence of secondary disability in people with traumatic brain injuries are anticipated when they are treated in similar systems of care.

Prevention of complications secondary to spinal cord injuries and traumatic brain injuries should be a joint priority between clinical and public health providers. Each person with such injuries should be evaluated to determine the likelihood of complications secondary to the primary injury and should be followed in a longitudinal system that consists of patient education and provision of appropriate care.

Risk Reduction Objectives

9.12 Increase use of occupant protection systems, such as safety belts, inflatable safety restraints, and child safety seats, to at least 85 percent of motor vehicle occupants. (Baseline: 42 percent in 1988)

Special Population Target

	Use of Occupant Protection Systems	*1988 Baseline*	*2000 Target*
9.12a	**Children aged 4 and younger**	**84%**	**95%**

Baseline data sources: National Highway Traffic Safety Administration and Fatal Accident Reporting System (FARS), U.S. Department of Transportation.

Achievement of the 85-percent use goal will depend on a number of factors, including the design of occupant protection systems provided by auto makers in coming years and the number of States with mandatory safety belt use laws. Beginning with the 1990 models, automobile manufacturers are required to equip all of their passenger cars with automatic crash protection. Most of the manufacturers are providing automatic safety belts and some are offering air bag systems to meet the new Federal requirement. The

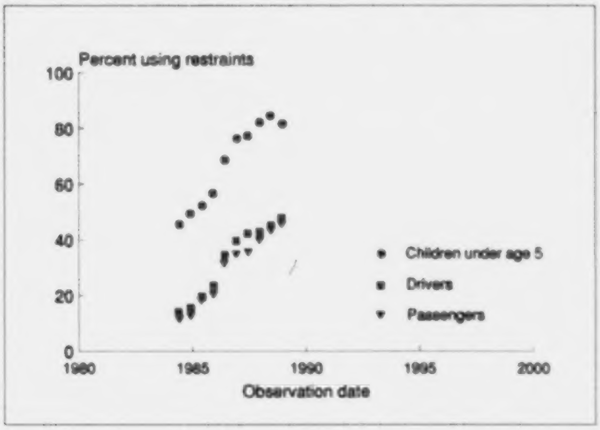


Fig. 9.12

Occupant restraint use by drivers, passengers, and children aged 4 and younger

restraint systems themselves will need to be constantly improved to keep abreast of advancing technology and to make them convenient and comfortable to use.

Based on current usage rates for automatic and manual belt systems, achievement of this objective is not unreasonable. However, the 17 States without mandatory belt use laws in 1989 will need to enact such laws, and several States with weak laws will need to strengthen them. The law enforcement community and the public at large must be convinced that these laws are important enough to warrant vigorous enforcement and public acceptance of that enforcement. In addition, the correct use of belts for all automobile occupants, including occupants of heavy trucks, should be promoted.

The special population target for passengers under 5 years old relates especially to the correct use of safety seats. It has been observed that child safety seats are often attached to the car incorrectly or not at all. Both safety seat manufacturers and automobile makers need to make proper installation and use of the seats easier for parents. Also, parents need to be aware that use of the seats is vital for all children under 5, not just infants. Instructions on the proper use of infant safety seats should be given to all parents of newborn infants.

9.13 Increase use of helmets to at least 80 percent of motorcyclists and at least 50 percent of bicyclists. (Baseline: 60 percent of motorcyclists in 1988 and an estimated 8 percent of bicyclists in 1984)

Baseline data sources: For motorcyclists, National Highway Traffic Safety Administration 19 Cities Survey, U.S. Department of Transportation; for bicyclists, R.C. Wasserman et al. 1988.

Head injury is the leading cause of death in motorcycle and bicycle crashes. Compared with motorcycle riders wearing helmets, unhelmeted riders are 2 times more likely to incur a fatal head injury and 3 times more likely to incur a nonfatal head injury.[34] The risk of head injury for unhelmeted bicyclists is more than 6½ times greater than for helmeted bicyclists.[51]

This objective reflects an expectation that gains made in motorcycle safety during the next 10 years will offset the dramatic setbacks in prevention of motorcycle crash-related injuries of the past 10 years and that more States will pass helmet use laws. For bicycling, the attitudes of children must be changed so they accept helmet use as a part of bicycling, just as professional athletes use them for sports. Achievement of this two-part objective will require major campaigns to raise the public awareness on motorcycle and bicycle safety issues and the importance of helmets.

Services and Protection Objectives

9.14 Extend to 50 States laws requiring safety belt and motorcycle helmet use for all ages. (Baseline: 33 States and the District of Columbia in 1989 for automobiles; 22 States, the District of Columbia, and Puerto Rico for motorcycles)

Baseline data source: National Highway Traffic Safety Administration, U.S. Department of Transportation.

Examination of motor vehicle crash deaths has proven that rates are reduced in those States with mandatory seatbelt use laws. An estimated 4,500 lives were saved in 1988 as a result of the 45-percent seatbelt use rate obtained nationwide, and 3,800 of those were in States that have mandatory laws.[27]

Between 1976 and 1980, State laws requiring helmet use were weakened or repealed in 28 States. In those States between 1975 (the year before repeals began) and 1980, motorcycle fatalities increased 56 percent while motorcycle registrations increased only 1 percent. Currently only 22 States, the District of Columbia, and Puerto Rico require helmet use by all motorcyclists; 24 States require use by motorcyclists below a certain age, usually 18. Four States have no requirement at all.[28] A recent study suggests that the rate of motorcycle-related deaths associated with head injury between 1979 and 1986 was almost twice as high in States with partial or no motorcycle helmet-use laws than in States with comprehensive helmet-use laws.[47]

9.15 Enact in 50 States laws requiring that new handguns be designed to minimize the likelihood of discharge by children. (Baseline: 0 States in 1989)

Baseline data source: Center for Environmental Health and Injury Control, CDC.

In 1987, 3,416 people under the age of 20 died from gunshot wounds. Although the death rate from firearm injuries generally is lower among children than young and middle-aged adults, opportunities for preventing firearm-related deaths may be greatest among children. One strategy is to modify the design of all newly manufactured handguns to prevent their discharge by children. Handguns that are more difficult for children to discharge may prevent a portion of both the unintentional and intentional discharges of handguns associated with firearm injuries in children.

9.16 Extend to 2,000 local jurisdictions the number whose codes address the installation of fire suppression sprinkler systems in those residences at highest risk for fires. (Baseline data available in 1991)

Residential sprinklers, particularly when used in combination with smoke detectors, provide a high level of protection from fire. While smoke detectors are capable of preventing more than half of the nearly 4,500 annual residential fire deaths, home sprinkler systems could save another 30 percent.[53] Sprinklers would have a much greater effect, however, than detectors on preventing injuries and property damage. The effect of sprinklers and detectors used in combination would be much greater than either one alone.

Requiring sprinklers for new construction is the most cost-effective and feasible approach to introducing residential sprinklers into U.S. housing. Retrofitting homes is possible but may not occur frequently because of the high cost involved. Because many small jurisdictions in the United States do not have building codes, the introduction of the requirements in the areas likely to be at highest risk—poor, rural, and minority communities—may be hampered without concerted efforts to promulgate new building codes. Requiring sprinklers in new manufactured housing (mobile homes) would be another important measure, since the risk of fire death in manufactured housing is twice the risk in other settings.[19]

9.17 Increase the presence of functional smoke detectors to at least one on each habitable floor of all inhabited residential dwellings. (Baseline: 81 percent of residential dwellings in 1989)

Baseline data source: International Association of Fire Chiefs.

The risk of dying in homes without detectors is approximately twice that of dying in homes protected with detectors. Those who are less likely to possess smoke detectors—the elderly and the poor—are also at higher risk of fire death.

To achieve the fire death objectives, high priority must be given to placing detectors in homes that are not protected. Even though detectors are extremely reliable, most detectors are powered by batteries that must be replaced periodically. One study of detectors and fatal fires found that dead batteries were to blame in about two-thirds of the instances of detector failure.[16]

9.18 Provide academic instruction on injury prevention and control, preferably as part of quality school health education, in at least 50 percent of public school systems (grades K through 12). (Baseline data available in 1991)

A large number of school-age children suffer disabling and fatal injuries each year. As educational programs for school children are developed and proven effective in preventing injuries, they should be included in quality health education curricula at the appropriate grade level. Education should aim not only at reducing risks of injury directly but also at preparing children to be knowledgeable members of the adult community. For a definition of quality school health education, see *Educational and Community-Based Programs*. The Center for Chronic Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1991.

9.19* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

Baseline data source: Center for Prevention Services, CDC.

Trauma to the head, face, eyes, and mouth is an all-too-frequent occurrence in athletic competition. Organizations with recreation and sports programs, as well as those that provide space, equipment, or facilities for sports, can reduce traumas by requiring the use of appropriate protective gear. In 1962, the use of mouth guards became mandatory for high school football. In 1974, the NCAA made mouth protectors and face guards mandatory for football, hockey, and lacrosse. Few organized leagues and intramural sports require protective gear. The exceptions are football, boxing (which requires mouth guards), and collegiate and under-18 ice hockey, which require players to wear face guards, helmets, and mouth guards.

Regulations requiring the use of protective headgear could considerably reduce injuries among those involved in professional and amateur sports, including basketball, football, ice hockey, field hockey, baseball, softball, lacrosse, soccer, squash, racquetball, wrestling, boxing, and gymnastics. For example, the use of mouth protectors and face guards in organized football reduced the incidence of mouth and face injuries from 50 percent of all football injuries during the 1950s to about 0.4 percent today. In contrast, 10 percent of baseball and 13 percent of ice hockey injuries are to the mouth and face. Mouth protectors and face guards are not currently required in these sports.

* This objective also appears as Objective 13.16 in *Oral Health*.

9.20 Increase to at least 30 the number of States that have design standards for signs, signals, markings, lighting, and other characteristics of the roadway environment to improve the visual stimuli and protect the safety of older drivers and pedestrians. (Baseline data available in 1992)

According to the National Safety Council, in 1985 approximately 6,400 motor vehicle deaths occurred to people aged 65 and older. Based on the number of licensed drivers, those aged 65 through 74 had lower rates of both fatal crash involvement and total crash involvement than was true for the driving population as a whole. In contrast, drivers aged 75 and older had 59 fatal crashes per 100,000, compared to 38 per 100,000 for drivers of all ages. For total crashes (fatal and nonfatal), this age group had 26 per 100 licensed drivers, compared to 21 for drivers of all ages. While these rates were higher than those for the general driving population, they were lower than those for drivers below age 25. However, some analyses assign the older driver the highest crash risk per mile driven.

Although pedestrian deaths account for more than 18 percent of all motor vehicle fatalities, they account for 35 percent of those occurring to people aged 75 and older. A comprehensive study reported that people aged 60 and older represented only 7.7 percent of pedestrians but accounted for 12.8 percent of pedestrian injuries (both fatal and nonfatal). Thus, it appears that older people are overrepresented in pedestrian casualties whether the analysis is based on population or exposure.

Environmental factors contribute to the injury problem with this age group. Highway design has been developed primarily on the basis of performance measures obtained from young men, failing to account for the capabilities and limitations of older drivers. One study found that older drivers who had similar results to younger drivers on standard tests of visual acuity still had to get much closer to highway signs at night to read them. Consequently, they had less distance remaining in which to react to the information provided. Older people as a group need more light to see as well as younger people, and they have more difficulty with glare recovery.[45] The Office of Disease Prevention and Health Promotion will collaborate with public and private agencies concerned with highway traffic safety to begin tracking this objective by 1992.

9.21 Increase to at least 50 percent the proportion of primary care providers who routinely provide age-appropriate counseling on safety precautions to prevent unintentional injury. (Baseline data available in 1992)

The opportunities for physician intervention in unintentional injury prevention are plentiful. In 1987, the average American had 5.4 contacts with a physician. In addition, three-fourths of all Americans had at least one contact with their physician during the previous year. Although behavioral risk factor counseling from a variety of sources—nurses, nurse practitioners, physician assistants, health educators—is beneficial, patients continue to view physicians as the most credible source of health information. Yet physicians do not always seize the opportunity to counsel patients about the prevention of unintentional injuries. Fewer than half the respondents in families with children under 5 years of age reported that a doctor had discussed the importance of using car safety seats for their children.[52]

Health care providers should urge all patients to use federally approved occupant restraints (e.g., safety belts and child safety seats) for themselves and others, to wear safety helmets when riding motorcycles, and to avoid driving under the influence of alcohol or other drugs. Counseling is particularly urged for individuals at increased risk of motor vehicle injury—adolescents and young adults, alcohol and other drug users, and patients whose medical conditions may diminish motor vehicle safety. Patients should be told not to drink alcohol or use other drugs when swimming, boating, bicycling, or handling firearms. Smokers should be told not to smoke near upholstery or in bed. Adult patients should be urged to install and periodically check smoke detectors in their homes and to set hot water heaters at 120 degrees Fahrenheit.

All patients with children in the home should be counseled to place all medications, toxic substances, matches, and firearms out of reach of children, to have a 1 oz bottle of syrup of ipecac available, and to display the telephone number of the nearest poison control center. To prevent falls in children, adults should be advised to have collapsible gates or other barriers at stairway entrances, to install 4-foot fences with latch-gates around swimming pools, and to place window guards in high-rise buildings.

Bicyclists and parents of children who ride bicycles should be made aware of the importance of wearing safety helmets and avoiding riding in heavy traffic. To prevent falls among older people, health care providers should suggest modifications to their home environments, test their visual acuity periodically, monitor their use of drugs, counsel them on medical conditions affecting mobility, and when appropriate, recommend physical exercise to maintain and improve flexibility and mobility.

The Office of Disease Prevention and Health Promotion in the Public Health Service will initiate a survey to gather baseline data and begin tracking of this objective in 1991.

9.22 Extend to 50 States emergency medical services and trauma systems linking prehospital, hospital, and rehabilitation services in order to prevent trauma deaths and long-term disability. (Baseline: 2 States in 1987)

Baseline data source: Center for Environmental Health and Injury Control, CDC.

Prevention of death and disability following injury requires easy and timely access to high-level prehospital emergency medical services (EMS). Prevention of adverse outcomes also requires that prehospital personnel transport people with life-threatening injuries directly to trauma center hospitals. Approximately one-third of hospital deaths occurring after injury victims have been transported to the nearest hospital were preventable if treatment had been altered.[1]

Although prehospital care provided by personnel trained in basic life support is adequate for most injuries, personnel trained in advanced life support are preferable for care of more severely injured patients.[55] In each State, a variety of public and private entities, such as cities, counties, fire departments, ambulance companies, volunteer groups, and hospitals provide prehospital personnel and services.[38] For the purpose of evaluating the public's ease of access to EMS and the type of services rendered, States collect data from the various entities that provide prehospital care.[29] States differ, however, in their capacity to gather and analyze these data, and in some States the scope of EMS evaluation is limited because the data are sparse or not readily available through computerized systems. The number of ambulance and rescue services and the level of care they provide when accessed by residents of specified communities are key structural characteristics of EMS that bear on patient outcomes.

Preventable hospital trauma deaths usually are due to failure to promptly diagnose and treat life-threatening injuries. When prehospital personnel deliver patients with severe injuries to hospitals incapable of caring for them, preventable deaths may result from inadequate care or from delays caused by the need to transfer the patients to another hospital. A solution to this problem is for States to foster the development of regional trauma systems.[6] In those systems, patients with life-threatening injuries are transported directly to designated trauma centers that are staffed and equipped to treat severely injured patients on a 24-hour basis.

Highly structured and integrated rehabilitation services begin immediately in the acute care hospital so that each injured patient recovers as completely as possible and has the best opportunity to return to productive status. In the Maryland trauma system, for example, a team of rehabilitation specialists initiates their care while patients are still hospitalized at the Shock Trauma Center in Baltimore. The same team continues to provide services when patients are transferred to the nearby trauma rehabilitation center.[25]

Although trauma systems can prevent death and long- and short-term disability, fewer than half the States have initiated trauma center designation and even fewer have implemented all the components of trauma systems.[57] Documenting the magnitude of the local trauma problem is an important first step in overcoming barriers to implementation of trauma systems. Trauma registries can serve as the principal tool for ongoing evaluation of trauma care, regardless of the status of regional trauma system development.[40] For a comprehensive evaluation of State or regional trauma care, registries must include data from all acute care hospitals and data on prehospital deaths. Linkage of data from the acute care phase of treatment with outcome data from rehabilitation services is fundamental for analysis of the effectiveness of trauma care.

Personnel Needs

Priorities for ensuring an adequate supply of health personnel to achieve the unintentional injury objectives include the following:

- Establish the number of health professionals who are needed to accomplish the practice, educational, and research aspects of these objectives.
- Provide curricular content on prevention of unintentional injuries in all schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge regarding the prevention of unintentional injuries.
- Include academic instruction on injury prevention in schools that train primary and secondary school educators and recreation professionals.
- Increase continuing education on the prevention of unintentional injuries by national professional associations whose members have roles in the delivery of health, education, and recreation services.
- Increase the number of faculty development programs and fellowships in injury prevention and control.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 9.11, 9.12, 9.14, 9.16, and 9.17.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 9.13, 9.15, and 9.22.

New surveillance systems are needed to track Objectives 9.18, 9.19, 9.20, and 9.21.

High Priority Data Needs

State- and community-level information about specific injury problems is needed to develop and evaluate prevention strategies and set priorities at these levels. To address these needs, the following improvements should be achieved over the coming decade:

- Develop a standardized system for the definition and classification of injuries by severity that is accurate, efficient, and cost-effective and that is compatible with the International Classification of Diseases (ICD) nature of injury classification system.
- Establish and refine existing State-level data systems for injury morbidity using the State Uniform Hospital Discharge Data system.
- Develop and refine risk factor surveys, including factors such as guns, smoke detectors, safety belt use, helmet use, drinking and driving, and swimming alone.
- Implement external cause of injury coding in hospital (emergency department, admission, and discharge) records, using the ICD Supplemental Classification of External Causes of Injury and Poisoning (E-Codes).
- Develop and implement standardized trauma-related registries, including trauma care registries, burn registries, and head and spinal cord injury registries. These registries should have detailed data on cost and outcome by cause, severity, and body region injured.
- Develop and implement a valid and useful classification system for physical and mental impairments that will meet the needs of researchers, program administrators, and rehabilitation specialists.
- Develop a data system that will provide information on the long-term physical, cognitive, psychological, and economic consequences of injury in the general population, with emphasis on severe injury resulting in long-term disability.
- Implement a periodic national medical expenditure survey, preferably every 5 years.
- Implement the recommendations of the National Academy of Sciences Panel on Occupational Safety and Health Statistics of the Committee on National Statistics to provide improved and accurate data on occupational injuries and deaths collected through Bureau of Labor Statistics data systems.
- Integrate injury-related data collected by law enforcement, transportation, fire safety, health departments, emergency medical and ambulance services, hospital records, trauma registries, and possibly others.
- Adapt the Consumer Product Safety Commission's National Electronic Injury Surveillance System to provide national surveillance data for all types of injuries treated in hospital emergency departments. Systems similar to NEISS could be developed and implemented at the State and local level to provide the data needed for effective monitoring of injuries.
- Establish State-based capacities to report, describe, and evaluate the number of ambulance and rescue services and the level of care they provide and legal requirements for establishment and use of statewide trauma registries that accumulate data from all acute care hospitals that provide trauma care.

Research Needs

Injury control in the United States will depend on the ability to identify and document the magnitude of the problem, understand the mechanisms of injury, and establish strategies and programs that are effective in addressing specific problems. Evaluation research on the effectiveness of interventions is required to make the public policy and resource allocation decisions needed to reduce injuries. Research on injury prevention will require the coordinated efforts of investigators in epidemiology, biomechanics and engineering, medicine, statistics, health economics, social science, behavioral science, criminal justice, law, occupational health, public health and others. Attention should be given in the next decade to the specific research recommendations in:

- *Injury in America: A Continuing Public Health Problem*, a report of the Committee on Trauma Research of the Institute of Medicine.[1]
- *Injury Control, A Review of the Status and Progress of the Injury Control Program at the Centers for Disease Control.*
- *Cost of Injury in the United States: A Report to Congress*[2]

Related Objectives from Other Priority Areas

Physical Activity and Fitness

1.6 Muscular strength, endurance and flexibility

Alcohol and Other Drugs

4.1 Alcohol-related motor vehicle crash deaths
4.6 Use by young people
4.7 Heavy drinking by high school seniors and college students
4.8 Alcohol consumption
4.9 Perception of social disapproval by high school seniors
4.10 Perception of harm by high school seniors
4.14 Worksite alcohol and drug policies
4.15 Driver's license suspension/revocation laws
4.16 Policies to reduce minors' access to alcohol
4.17 Alcohol concentration tolerance levels

Violent and Abusive Behavior

7.3 Weapon-related deaths
7.11 Inappropriate storage of weapons

Educational and Community-Based Programs

8.4 Quality school health education
8.6 Worksite health promotion activities
8.10 Community health promotion programs

Occupational Safety and Health

10.1 Work-related injury deaths
10.2 Nonfatal work-related injuries
10.6 Worksite occupant protection system mandates
10.10 State occupational health and safety plans
10.12 Worksite health and safety programs
10.13 Worksite back injury prevention and rehabilitation programs
10.14 State programs for small business safety and health

Diabetes and Chronic Disabling Conditions

17.2 Disability due to chronic conditions
17.5 Activity limitations due to chronic back conditions
17.7 Vision impairment
17.8* Mental retardation
17.18 Counseling about estrogen replacement therapy

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.3 Comparable data collection procedures

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Federal Accident Reporting System, Federal Highway Administration, Department of Transportation, Washington, DC.

National Fire Incident Reporting System, U.S. Fire Administration, Federal Emergency Management Agency, Washington, DC.

National Electronic Injury Surveillance System, U.S. Consumer Product Safety Commission, Washington, DC.

National Hospital Discharge Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Head and Spinal Cord Injury Survey, Center for Environmental Health and Injury Control, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

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Occupational Safety and Health

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10. Occupational Safety and Health

Introduction

Approximately 110 million people make up the American work force, with most spending major portions of their days in their work environments. Premature death, diseases, injuries, and other unhealthful conditions resulting from occupational exposures pose important national health problems. Although the number of fatal occupational injuries has gradually declined in recent years, work-related illnesses and nonfatal injuries appear to be increasing. During 1987 alone, permanent impairments suffered on the job grew from 60,000 to 70,000, total disabling injuries numbered 1.8 million, and combined occupational illnesses and injuries in the manufacturing industries increased by 13.5 percent.[2] Some of this increase may be explained by growth in the work force and improved record-keeping. Beyond the documented cases are both the work-related injuries not reported in employers' records and the diseases, many of long latency, that are linked to occupational hazards unrecognized by employer or employee.

Techniques for the recognition and prevention of occupational safety and health problems must be applied with full awareness of changes in the American workplace. A major shift from employment in manufacturing industries to service industries is occurring. Improved technologies may pose their own occupational risks. New chemical compounds continue to be introduced to society at a rapid rate. Automation and robotics have demonstrated the potential for increasing cumulative trauma disorders, and the computerized office may well produce significant levels of stress. Beyond the manufacturing and service industries, agricultural work continues to be one of the most hazardous occupations, with death and permanent disability rates that remain consistently high.[12] In addition, employees of small businesses, who make up the majority of America's workers, often do not have the benefit of safety and health measures tailored to their working conditions.[17]

The Occupational Safety and Health Act of 1970 was framed "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions." Realization of that mandate requires the diligent and coordinated application of surveillance, research, control technology, enforcement of regulation and/or compliance, and the development of suitably trained personnel. A comprehensive approach to addressing these needs is provided in *National Prevention Strategies for the Ten Leading Work-Related Diseases and Injuries*, published by the National Institute for Occupational Safety and Health (NIOSH), published in two volumes in 1986 and 1988, respectively. This document specifically addresses occupational lung diseases, musculoskeletal injuries, occupational cancers, severe occupational traumatic injuries, occupational cardiovascular diseases, disorders of reproduction, neurotoxic disorders, noise-induced hearing loss, dermatological conditions, and psychological disorders.[11] It is recognized that strategies to achieve improvements in worker safety and health must include careful analyses and planning to evaluate economic and employment impacts.

Realization of the Occupational Health and Safety Act's mandate depends on an increase in the number of professionals trained in occupational health and safety-related professions. In 1982, more than 60 percent of worksites were without occupational health and safety staff or consultants. The occupational health and safety professional work force comprises many separate disciplines, including industrial hygienists, occupational physicians, occupational nurses, toxicologists, epidemiologists, and safety engineers. Significant improvements in this field will require recruitment of more specialists in industrial hygiene, occupational medicine, and law within private and public sectors. Because of rapid developments in industrial materials and technology, continuing education for safety engineers and occupational physicians is necessary to prevent the rapid obsolescence of professional skills. In addition to the core occupational safety and health disciplines, many other professionals can contribute to the prevention and reduction of injuries, illnesses, and fatalities. The professional education of all primary health care providers as well as engineers and managers should include appropriate instruction in occupational safety and health. The reduction of leading work-related injuries and illnesses and the prevention of new problems require that accrediting bodies of all scientific disciplines understand the role of their professions in recognizing or preventing occupational and environmental problems. Progress in this area also depends greatly on improvements in surveillance to identify high-risk groups and to assist in developing appropriate prevention strategies.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

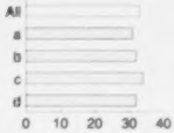
Health Status Objectives

10.1 Reduce deaths from work-related injuries to no more than 4 per 100,000 full-time workers. (Baseline: Average of 6 per 100,000 during 1983-87)

Special Population Targets

	Work-Related Deaths (per 100,000)	*1983-87 Average*	*2000 Target*
10.1a	**Mine workers**	**30.3**	**21**
10.1b	**Construction workers**	**25.0**	**17**
10.1c	**Transportation workers**	**15.2**	**10**
10.1d	**Farm workers**	**14.0**	**9.5**

Percent Decrease



Baseline data source: Annual Survey of Occupational Injuries and Illnesses, U.S. Department of Labor. The Department's Bureau of Labor Statistics collects these data for businesses with 11 or more workers.

Occupational injury causes a major portion of unintentional injury deaths, which are the Nation's leading cause of lost productive years of employment. Estimates of combined and specific industry deaths vary widely, with totals for 1987 ranging from 3,400 to 11,000.[18,20] At least two major surveys suggest a 20- to 25-percent decline from 1978 to 1987.[19] Bureau of Labor Statistics (BLS) data are used for tracking purposes here although the agency notes that its data understate the number of work-related deaths. The National Traumatic Occupational Fatality database, established by NIOSH, contains information from death certificates for work-related deaths in all 50 States. Both systems can be used during the coming decade to track changes in work-related deaths.

Approximately 40 percent of fatal injury victims in 1987 were between 25 and 44 years old. New workers are at special risk in many occupations. More than 20 percent of fatal occupational injuries in the mid-1980s involved highway vehicle crashes, which were the leading cause of death in seven of eight industry divisions. Recent U.S. Department of Labor action has been specifically directed to this issue. Other causes included falls (13 percent), nonhighway industrial vehicular injuries (11 percent), blows other than by vehicles or equipment (8 percent), and electrocutions (7 percent).

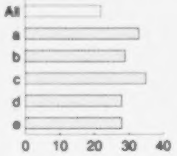
Although mining (including quarrying and extraction of oil and gas) fatalities fell somewhat during the mid-1980s, they are still among the highest levels of occupational deaths.[13] Agricultural worker deaths may be underestimated because many farm work forces have fewer than 11 workers and are therefore not identified by national data systems. The National Safety Council has estimated a rate as high as 52.1 deaths per 100,000 agricultural workers.[12] The number of fatal injuries in construction (670) and manufacturing (770) were higher than in mining (200) during 1986, but far more people were employed in these nonmining occupations. The safety record of manufacturers (4.3 deaths per 100,000 employees) was better than the average for all private industry (5.9) if only fatalities are considered. When all job-related injuries are taken into account, however, accident prevention by manufacturers was below average.

10.2 **Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity to no more than 6 cases per 100 full-time workers. (Baseline: 7.7 per 100 in 1987)**

Special Population Targets

	Work-Related Injuries (per 100)	*1983-87 Average*	*2000 Target*
10.2a	**Construction workers**	14.9	10
10.2b	**Nursing and personal care workers**	12.7	9
10.2c	**Farm workers**	12.4	8
10.2d	**Transportation workers**	8.3	6
10.2e	**Mine workers**	8.3	6

Percent Decrease



Baseline data source: Annual Survey of Occupational Injuries and Illnesses, U.S. Department of Labor.

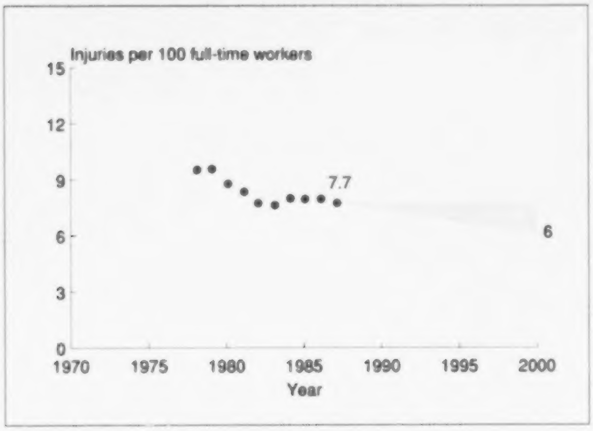


Fig. 10.2

Work-related injuries resulting in medical treatment, lost time from work, or restricted work activity

Nonfatal injuries that occur on the job may not only require immediate medical care but may also involve extensive recuperation and permanent disability. NIOSH estimates that at least 10 million injuries occur on the job each year, about 3 million of which are severe. Every workday more than 10,000 people suffer injuries that result in lost work time. Almost one-half of all occupational injuries reported in 1986 required either time off from work or restricted job activity.[3]

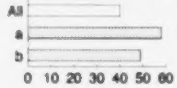
Goods-producing businesses (including construction) have higher injury rates than the private sector as a whole (11 versus 7.7 per 100 workers, respectively, in 1986). Lumber and wood products manufacturing have more worker injuries than do other goods producers, and trucking and warehousing have the highest injury rates in the service sector. Mining injuries, including those involving oil and gas exploration, declined in the mid-1980s, but remain high. Nearly half of the 170,000 disabling farm injuries each year result in permanent impairment, costing an estimated $2.5 billion in hospital and rehabilitation expenses.[12] Reports of injuries among nursing home workers and other personal caregivers increased between 1983 and 1987, with back injuries accounting for more than 40 percent of these reports.[24] Companies with fewer than 50 or more than 1,000 employees had lower injury rates than did establishments of other sizes.[4] An estimated 2.4 million eye injuries occur in the workplace each year, resulting from exposure to chemical, radiation, physical, and biological sources, with over 60 percent of workers who experience eye injuries not wearing eye protection at the time of injury.[2]

Although the manufacturing industries have the highest individual rates of job-related injuries, a group of industries with large total work forces report the largest numbers (as opposed to rates) of injuries. These include eating and drinking establishments, grocery stores, hospitals, trucking companies, nursing homes, department stores, and hotels/motels. While employees in occupations related to these enterprises comprise about one-fifth of the total work force, they report one-fourth of the injuries.

Despite the number of occupational injuries, effective prevention is practiced in many workplaces, and approximately 48 percent of all establishments report no injuries in a given year.[13] As with other occupational health hazards, the prevention of severe trauma rests on the basic principles of control technology: engineering controls, work practices, personal protective equipment, and monitoring of the workplace for emerging hazards.

10.3 Reduce cumulative trauma disorders to an incidence of no more than 60 cases per 100,000 full-time workers. (Baseline: 100 per 100,000 in 1987)

Special Population Targets

	Cumulative Trauma Disorders (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
10.3a	**Manufacturing industry workers**	355	150	
10.3b	**Meat product workers**	3,920	2,000	

Baseline data source: Annual Survey of Occupational Injuries and Illnesses, U.S. Department of Labor.

Cumulative trauma disorders result from repetitive motion, repeated pressure, or repeated exposure to noise.[8] Repetitive motions may lead to such disorders as carpal tunnel syndrome, tendonitis, ganglionitis, tenosynovitis, bursitis, and epicondylitis. Repetitive wrist flexing or arm-wrist-finger movement may lead to damage of the muscles, tendons, and ligaments in the wrist that becomes noticeable only after months or years of routine work. Carpal tunnel syndrome and other cumulative trauma disorders affecting the wrist are often associated with work on assembly lines, such as in the automotive, electronics, and meat processing industries. It may also affect musicians, waitresses, and office workers. Bursitis, a cumulative trauma disorder affecting the shoulder, is most often found among workers who perform work above their heads, such as installation of ceilings and overhead light fixtures, fruit picking, and some assembly line jobs. Less commonly affected by repetitive motion are elbows, neck, upper back, lower back, hips, and knees. Disorders due to repeated motion may be prevented by applying principles of ergonomics such as providing tools that allow joints to be in their anatomically natural position during the motions.

Repeated pressure disorders may result from frequent force applied to a particular body part. Carpet installers who frequently use their knees to kick a carpet stretcher can develop knee disorders, sometimes referred to as carpet-layer's knee. Cement finishers and coal miners whose work requires them to support their body weight by kneeling on a hard surface may develop another form of cumulative disorder in their knees. Knee pads are available to help distribute the load to a larger area of the knee. Repeated exposure to vibration, such as operation of a jack hammer or chain saw, can lead to carpal tunnel syndrome or vibration white finger disease (Raynaud's phenomena). Some exposures can be avoided by the use of equipment that dampens the vibration.

10.4 Reduce occupational skin disorders or diseases to an incidence of no more than 55 per 100,000 full-time workers. (Baseline: Average of 64 per 100,000 during 1983-87)

Baseline data source: Annual Survey of Occupational Injuries and Illnesses, U.S. Department of Labor.

Despite recent declines of incidence, occupational skin disorders or diseases are still among the most important causes of illness and lost work time. In 1987, 28 percent of all occupational illnesses reported were dermatologic.[2] A worker's skin is often directly exposed to a hazardous job environment and is susceptible to a large number of acute injuries and chronic diseases, including eczema, contact dermatitis, oil acne, chrome ulcers, and chemical burns. Sources of irritation and injury include toxic chemicals and plants, temperature extremes, sharp or abrasive materials and equipment, and other mechanical irritants like mineral wool. Outdoor workers have increased risk of skin cancer due to sun exposure.

The most effective prevention measures are engineering controls that eliminate exposure of the skin to chemical, physical, or mechanical agents through isolation, containment, or redesign of industrial processes. Protective clothing should be selected on the basis of both resistance to chemical and physical hazards and relative permeability to specific chemicals. Such equipment can also prevent systemic worker exposure to dangerous solvents absorbed through the skin. In addition, worker education regarding personal hygiene is extremely important in controlling the effects of exposure.

10.5* Reduce hepatitis B infections among occupationally exposed workers to an incidence of no more than 1,250 cases. (Baseline: An estimated 6,200 cases in 1987)

Baseline data source: Center for Infectious Diseases, CDC.

Hepatitis B virus (HBV) infection is a vaccine-preventable disease. Yet an estimated 12,000 health care workers become infected with HBV each year and approximately 6200 clinical HBV infections occur. From 500 to 600 health care workers are subsequently hospitalized, and 700 to 1,200 of those infected become HBV carriers. Approximately 12 to 15 will die from fulminant hepatitis, 170 to 200 from cirrhosis, and 40 to 50 from liver cancer. From 10 to 30 percent of health care (including dental) workers show serologic evidence of past or present HBV infection. Approximately 25 percent of those infected with HBV develop acute hepatitis. However, for many, HBV infection is not evident.

HBV is transmitted in occupational settings only by percutaneous inoculation or exposure of broken skin or mucous membranes to blood, blood-contaminated body fluids, or concentrated virus. Blood is the single most important source of HBV in the workplace setting. The risk of infection after a needle stick or other exposure to blood depends upon the presence of HBV surface antigen (HBsAg), the immunity status of the worker, and the efficiency of transmission. The probability that blood in an unintentional exposure is HBsAg positive varies from 0.1 to 0.3 percent in the general population to 5 to 15 percent in high-risk groups, such as immigrants from China and Southeast Asia, sub-Saharan Africa, most Pacific islands, and the Amazon Basin; clients in institutions for the mentally retarded; intravenous drug users; homosexually active males; and household (sexual and nonsexual) contacts with HBV carriers. Of those exposed to HBV-positive blood by needle stick but without prior vaccination or postexposure prophylaxis, 6 to 30 percent will become infected.

Although emergency medical workers have a high risk for HBV infection, reports on other public safety workers (law enforcement and correctional personnel) have not documented any increased likelihood of contracting HBV. Nevertheless, in occupational settings in which workers may be routinely exposed to blood or other body fluids (including saliva from bites), an increased risk for HBV infection must be assumed.

Meeting the target set for this objective depends on vaccination for occupationally exposed workers as well as carefully monitored standards and effective worker education.

Workers can be protected by work practices that minimize or eliminate exposure, such as regular use of special personal gloves, masks, and protective clothing. Occasionally equipment modifications or environmental controls can further reduce risk. Any exposures should be followed by collection of pertinent medical and occupational histories, provision of treatment, and counseling about future work and personal behaviors. Decontamination of the work environment, devices, and clothing and other protective equipment can reduce subsequent risk of exposure. Proper disposal of contaminated waste is also necessary.

OSHA published the "Notice of Proposed Rulemaking on Bloodborne Diseases" in the *Federal Register* in May 1989. Mandatory regulations resulting from OSHA's effort should be in place early in the decade and near total compliance should be possible before 2000.

* This objective also appears as Objective 20.3e in *Immunization and Infectious Diseases*.

Risk Reduction Objectives

10.6 Increase to at least 75 percent the proportion of worksites with 50 or more employees that mandate employee use of occupant protection systems, such as seatbelts, during all work-related motor vehicle travel. (Baseline data available in 1991)

Motor vehicle crashes are the leading cause of occupational fatalities in virtually every division of U.S. industry. In 1987, they accounted for over one-third (approximately 4,000) of all job-related deaths. Crashes are also the single largest cause of lost work time.[19]

Ford Motor Company estimated that just a 10-percent increase in employee seatbelt use could save the lives of 3 of its workers, protect 121 others from injury, and save $3.75 million in disability claims, medical insurance, and training costs. At the time of its study, Ford found only 3.6 percent of its employees using seatbelts.[26]

Many companies have initiated aggressive programs to promote seatbelt use among their workers. Compliance of 60 to 90 percent has been reported where enforcement mechanisms are in place, and the U.S. Department of Labor is moving to address the issue of work-related motor vehicle crash injuries. Although mandatory approaches have been effective, the most successful policies have incorporated both incentives (awards, lottery tickets, extended insurance coverage) and educational components (discussions, films, handouts, and presentations). Other protective measures are important as well, including regular vehicle inspections and preventive maintenance and training of operators, especially of heavy vehicular equipment. Some employers also encourage employee seatbelt use off the job to reduce the overall injury and death rates from motor vehicle accidents, which are responsible for an estimated 45 million lost workdays. Employers absorb approximately $10 billion annually in insurance costs for off-the-job crashes.[26]

The Office of Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1991.

10.7 Reduce to no more than 15 percent the proportion of workers exposed to average daily noise levels that exceed 85 dBA. (Baseline data available in 1992)

An estimated 8 million workers in U.S. manufacturing industries are exposed to potentially hazardous average daily levels of occupational noise at 80 dBA and above.[25] More than 3 million workers in other occupations are exposed to average daily levels above 85 dBA. One U.S. worker in four exposed to 90 dBA over a working lifetime will develop a hearing impairment.[15] Noise-induced hearing loss can be caused by integrated, continuous, or intermittent noise levels of 85 dBA, individual instances of 140 dBA, or short-term exposures of 115 dBA. Workers exposed to industrial noise may not manifest noise-induced hearing loss for as many as 10 years after initial exposure. This condition results from progressive destruction of sensory cells in the ear. Once damaged, these cells can neither repair themselves nor be medically restored. Noise-induced hearing loss increases in severity with continued exposure to noise.

High noise levels and associated injury can cause many emotional and job-related difficulties, including impaired communication and irritability. Noise-induced hearing loss lowers self-esteem and often leads to self-imposed withdrawal from society. Affected employees may face several problems in a noisy production area, including compounded communication difficulties and reduced capacity to monitor changes in machinery sounds and danger signals. These problems may be interpreted as reductions in job performance, and the worker may face transfer or loss of employment.

Because remedial action cannot completely restore or compensate for lost hearing capacity, prevention is the key to reducing noise-induced hearing loss. Prevention requires that available interventions be fully implemented. Easy-to-understand information on existing techniques for hearing conservation and noise control should be broadly distributed to management and labor. Employers must be informed and encouraged to reduce the hazard to workers by controlling noise in the workplace.

Before passage of the Hearing Conservation Amendment of 1982, no mechanism existed for monitoring work-related hearing loss. The Occupational Safety and Health Administration (OSHA) now requires that audiometric tests be given to noise-exposed workers each year. Current and accurate data must be collected to assess the scope of the problem and to monitor the effects of prevention and intervention efforts.

NIOSH will establish baseline data and begin tracking this objective by 1992.

10.8 Eliminate exposures which result in workers having blood lead concentrations greater than 25 μg/dL of whole blood. (Baseline: 4,804 workers with blood lead levels above 25 μg/dL in 7 States in 1988)

Baseline data source: National Institute for Occupational Safety and Health, CDC.

Exposure to lead can produce a variety of cardiovascular, reproductive, neurotoxic, metabolic, and hematologic effects. Workers exposed to lead may include battery makers, construction workers, radiator repair workers, ceramists, rubber and chemical workers, enamel workers, insecticide workers, and plumbers. Children and other family members may be exposed to lead dust transported into homes on workers' clothing.

The OSHA lead standard requires that any worker whose average blood lead level (BLL) exceeds 50 μg/dL be removed from exposure to lead. OSHA clearly prohibits employers from using prophylactic chelation to reduce BLLs below the Federal standard. Recent studies suggest that significant health risks exist for workers with BLLs below 50 μg/dL, possibly in the 30 to 40 μg/dL range. Such risks include neurologic impairment, hypertension, and adverse reproductive effects in both men and women.[7] A positive relationship between BLLs and both systolic and diastolic blood pressures has been found. Notably, there was no evidence of a threshold level for this effect.[25] Maternal lead exposure has been associated with reduced birth weight and gestational age, as well as impaired neurobehavioral development up to 2 years of age. Even maternal lead exposures below 25 μg/dL can lead to lower child IQ, slower reaction time, inadequate vitamin D metabolism, reduced size up to 8 years of age, and other neurotoxic effects.[7]

The precise level of lead exposure that causes adverse health effects is the subject of ongoing scientific debate. Further studies are needed to evaluate the effects of low levels of lead exposure to the central nervous system and on the male reproductive system. Though this objective calls for a more stringent exposure level than the standard currently set by Federal regulation, it is based on expectation that improvements in exposure control technology, coupled with industry commitment to ensure safety precautions for workers, will make possible safeguards at this lower level of exposure.

Preventing occupational lead exposure depends on concerted surveillance, evaluation, and control activities to identify high-risk industries or occupational groups. These efforts are critical to directing appropriate control actions and to linking adverse health effects to specific levels of exposure. Control of occupational lead exposure depends on technologic and administrative safeguards. Improved control mechanisms can extend coverage to a larger proportion of the work force by such simple devices as substituting water- or solvent-based paints for lead-based paints. Through joint efforts, the major workplace problems of occupational lead exposure can be averted.

10.9* Increase hepatitis B immunization levels to 90 percent among occupationally exposed workers. (Baseline data available in 1991)

A safe and effective vaccine to prevent hepatitis B infection has been available since 1982. Vaccination has been recommended for health care workers regularly exposed to blood and other body fluids potentially contaminated with hepatitis B virus. In 1987, the U.S. Department of Health and Human Services and the U.S. Department of Labor stated that hepatitis B vaccine should be provided to all such personnel at no charge to the individual. Available vaccines stimulate active immunity against hepatitis infection and provide over 90-percent protection for 7 or more years. Vaccines also are 70- to 88-percent effective when given within 1 week after exposure to hepatitis B. Hepatitis B immunoglobulin (HBIG) provides temporary passive protection after hepatitis B exposure. Combination treatment with vaccine and HBIG is over 90-percent effective in preventing infection after a documented exposure. Immunization should nevertheless be used to complement, but not replace, standard procedures for infection control.[6] The Center for Prevention Services will establish baseline data and track this objective beginning in 1991.

OSHA published the "Notice of Proposed Rulemaking on Bloodborne Diseases" in the *Federal Register* in May 1989. Mandatory regulations resulting from OSHA's effort should be in place early in the decade and near total compliance should be possible by 2000.

*This objective also appears as Objective 20.11 in *Immunization and Infectious Diseases*.

Services and Protection Objectives

10.10 Implement occupational safety and health plans in 50 States for the identification, management, and prevention of leading work-related diseases and injuries within the State. (Baseline: 10 States in 1989)

Baseline data source: Public Health Foundation.

Altogether, 25 States have State occupational safety and health programs that are approved by OSHA authorizing them to conduct regulatory enforcement programs. Ten States participate in the NIOSH Fatal Accident Circumstances Epidemiology program, 10 States participate in the NIOSH Sentinel Event Notification Systems for Occupational Risk (SENSOR) program, and about 40 States produce occupational injury and illness estimates used by the BLS statistical program. Although many States have data from death certificates, workers' compensation claims, and reporting mechanisms for cancer and other illnesses, most States have not developed a systematic and ongoing plan to attack the leading causes of major work-related diseases and injuries in an effective program of prevention. It is important that the leading causes of injury and disease in the workplace be identified for each State and that prevention and control goals be set accordingly.

The plan envisioned by this objective includes an organizational structure that clearly delineates responsibilities for occupational safety and health practices as well as an operational plan that provides for disease and injury reporting systems, hazard communications and hazard control. It may or may not overlap with the OSHA-approved State plan for carrying out enforcement programs. It should provide for data collection and analysis, education and outreach efforts, and program development to bring about improvements in health for the State's workers.

10.11 Establish in 50 States exposure standards adequate to prevent the major occupational lung diseases to which their worker populations are exposed (byssinosis, asbestosis, coal workers' pneumoconiosis, and silicosis). (Baseline data available in 1991)

Although occupational lung disease is associated with a wide range of respiratory hazards, exposures to several common materials in construction, manufacturing, and mining have become regulatory targets because of their frequent role in worker illness and death. Exposure of lung tissue to silica, cotton dust, asbestos, and coal dust may lead to progressive fibrosis, resulting in labored breathing, weakness, and eventual respiratory failure. For this reason, these issues have been important concerns of both OSHA and the Mine Safety and Health Administration.

Although the effects of exposure to free crystalline silica have been known for centuries, the prevalence of disabling acute and chronic silicosis remains high in certain groups of workers (workers in mines, stone quarries, sand and gravel operations, foundries, abrasive blasting operations, and glass manufacturing).[15] The problem persists because exposures above legal limits continue to occur, both where overexposures are well documented and where silica exposures are not recognized. Once exposure is recognized, controls can be established through better engineering technologies or through substitution of materials. The most effective preventive measure for silicosis is strict enforcement of an appropriate exposure standard.

Byssinosis is primarily a condition affecting cotton workers. A surveillance system and establishment of standards sufficient to eliminate byssinosis-related illness and death should be concentrated in those States where the cotton industry is prominent.

Asbestosis is an asbestos-induced disease with a latency of 15 years or more. Asbestos is also associated with cancers of the lung and body lining which may have a latency of 20 to 40 years. Long latency and the synergistic effects of smoking pose major obstacles to effective surveillance and control of these lung diseases. The results of instituted intervention methods will not be known for many years and will be reliable only if surveillance is complete and ongoing. Occupations where workers are likely to be exposed to asbestos must be identified, and attention must be given to environmental surveillance and control of hazards in such occupations.

Coal workers' pneumoconiosis appears to be declining because of the present Federal dust standard, which shows that prevention of the disease is a realistic goal from both technical and economic viewpoints. Even after the development of simple coal workers' pneumoconiosis, complications can be prevented if worker exposure to dust is sufficiently reduced.[7] Efforts should be made to increase the awareness of dust control techniques among small-scale operators. Understandable manuals on the latest control methods and better sampling methods are needed for underground and surface mines.

Although the elimination of byssinosis, asbestosis, coal workers' pneumoconiosis, and silicosis was a target of the 1990 objectives, surveillance data to track disease and death from occupational lung diseases are unavailable. It is essential that reliable data be obtained to determine worker exposure levels and employer compliance. The current SENSOR program being conducted in 10 States has begun pioneering work in surveillance of conditions that cause silicosis and coal miners' pneumoconiosis.

There is also insufficient information about the exposures that can result in these diseases. Current Federal exposure standards for cotton dust, asbestos, coal dust, and silica may allow for the continued development of some respiratory illness among workers. Still, the elimination of exposures that can result in occupational lung diseases among workers is an achievable objective for the year 2000. More stringent standards, universally applied, could eliminate virtually all workplace exposure to the causative agents of byssinosis, asbestosis, coal workers' pneumoconiosis, and silicosis.

10.12 Increase to at least 70 percent the proportion of worksites with 50 or more employees that have implemented programs on worker health and safety. (Baseline data available in 1991)

Comprehensive occupational health and safety programs should provide worksite hazard identification, medical management or referral of employees for health problems, a hazards communication program, and an employee health insurance program. Other desirable components include a smoking cessation program; an employee assistance program for substance abuse and personal counseling; a health promotion program addressing exercise, nutrition, cholesterol, and stress; worker education on injury prevention; and a routine medical surveillance program.

The worksite is an ideal location for teaching individuals about positive health practices. Increasing attention to occupational health issues is apparent among employers, employees, and the health community, all of whom have strong incentives to implement worksite health promotion activities. Employers indicate that healthy employees are absent less, are more productive, and use fewer medical benefits; company image, recruitment, and morale are also enhanced. Employees gain not only a safe work environment but also direct access to services that improve their health at a convenient location, sometimes during work hours, with the employer often paying for the service. The workplace offers health care providers an opportunity to affect the health practices of a significant portion of the population, including dependents and retirees.

In January 1989, OSHA issued Safety and Health Program Management Guidelines for use by employers to prevent occupational injuries and illnesses. These guidelines are based on the strong association between sound management practices in work-related safety and health and a low incidence of occupational injuries and illnesses. Voluntary programs at worksites have been linked to rates of lost workdays that are only one-third to one-fifth that of average worksites.[21] An early OSHA standard requiring safety and health management programs in the construction industry was recently clarified and reaffirmed. OSHA has also instituted programs to develop informational pamphlets and consultation services that assist small businesses.

In 1985, nearly 66 percent of worksites with more than 50 employees offered at least one health promotion activity. The most frequently cited categories of activities were smoking control (35.6 percent), health risk assessment (29.5 percent), back care (28.6 percent), stress management (26.6 percent), exercise and fitness (22.1 percent), and off-the-job accident prevention (19.8 percent).[22] (See also Objectives 8.6 and 8.7 in *Educational and*

Community-Based Programs.) The Office of Disease Prevention and Health Promotion will initiate a survey to establish baseline data and track this objective in 1991.

10.13 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer back injury prevention and rehabilitation programs. (Baseline: 28.6 percent offered back care activities in 1985)

Baseline data source: National Survey of Worksite Health Promotion Activities, ODPHP.

The high incidence of back injuries in a wide range of occupations, such as nursing, firefighting, and industrial jobs, is widely documented.[1] In heavy industry, as many as one worker in five may be affected. Many occupational tasks that can cause back injury need to be completely restructured and equipment must be either modified or replaced. Training of workers regarding lifting techniques has been recommended for decades, but recent findings question the utility of any single lifting technique.[26]

"Back school" training has proven effective in reducing employment-related injuries and relieving low back pain. Two studies of workers in manufacturing reported 49- and 68-percent fewer back injuries after employee participation in back schools.[5] A back school program usually includes education, analysis of lifestyle with suggested modifications, and, most importantly, exercise.[23] One study of firefighters revealed a higher incidence of back injuries among the least fit subjects.[10] These programs should be used as adjuncts to, rather than substitutes for, engineering changes whenever such changes can eliminate the risk of back injury.

Prevention and rehabilitation programs related to this problem are second in number only to smoking control activities among specific health promotion programs in the workplace.[22] In 1985, a national survey found that 28.6 percent of worksites with 50 or more employees offered back care activities. Of these, nearly all (91.5 percent) offered information, more than 50 percent offered classes, and about 20 percent offered special events to prevent or manage back problems. Employers most often cited reduced health care costs, improved morale, and reduced absenteeism as the principal benefits of these programs. About 65 percent of survey respondents felt that the benefits of these programs outweighed the costs and fewer than 2 percent believed the converse.[22]

10.14 Establish in 50 States either public health or labor department programs that provide consultation and assistance to small businesses to implement safety and health programs for their employees. (Baseline data available in 1991)

OSHA supports State-based on-site consultation services for all States, territories, and the District of Columbia. Because OSHA does not do routine inspections in businesses with 10 or fewer employees, small businesses may not have access to the information and guidance that would be useful to improve health and safety measures for their employees. These small businesses greatly need the assistance that OSHA's consultation program provides. Such businesses comprise 74 percent of all U.S. business establishments and 16 percent of the total work force.[17] Workers in the service sector, employed by small business owners, can be at significant risk of disease and injury. For example, workers in dry cleaning establishments, beauty shops, funeral parlors, automobile repair shops, and research and development laboratories are often exposed to dangerous chemical agents.

The U.S. Department of Labor predicts that most new jobs created in the next 10 years will be in small businesses.[17] To address the growing need for safety and health programs in small businesses, State-based, on-site consultation programs have been initiated on a voluntary basis. Such programs, expanded to all States, can assist small business employers in identifying potential hazards in their workplaces, characterizing health and safety problems to which their employers are exposed, developing cost-effective control recommendations, and disseminating their recommendations to the small business sector. NIOSH will sponsor work, in collaboration with the U.S. Department of Labor, to establish baseline data and track this objective in 1991.

10.15 Increase to at least 75 percent the proportion of primary care providers who routinely elicit occupational health exposures as a part of patient history and provide relevant counseling. (Baseline data available in 1992)

Many American workers are employed by small businesses and have no access to employer-sponsored, professionally staffed occupational safety and health programs. That fact places special responsibility on primary health care providers to recognize and attempt to reduce the work-related risks to which their patients are exposed. National estimates of the proportion of primary health care providers who inquire about occupational exposures are scarce and are based on limited studies.[9]

In cooperation with NIOSH, a confederation of medical school faculty sponsored a pilot program in 1987 that linked faculty in medical schools without an occupational health component to practicing occupational physicians in the business community. More recently, the accreditation body for family practice residencies added occupational medicine as a required subject for accredited programs and adopted a core curriculum program of instruction. *The Role of the Primary Care Physician in Occupational and Environmental Medicine*, published by the Institute of Medicine, has served as a platform for efforts led by NIOSH to increase primary care providers' ability to identify and record work-related health problems and to assure the availability of medical competence for preventing occupational injury and illness.[9] The Office of Disease Prevention and Health Promotion will initiate a survey to establish baseline data and begin to track this objective in 1992.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the occupational safety and health objectives include the following:

- Establish the number of occupational safety and health professionals who are needed to accomplish the practice, educational, and research aspects of the objectives.
- Provide curricular content on occupational safety and health in all schools and programs preparing students for careers in business, agriculture, engineering, health sciences, and public health; and ensure that all graduates of such schools and programs can demonstrate knowledge of relevant subjects.
- Increase the provision of continuing education on occupational safety and health by national professional associations whose members have roles in the policies, management, and delivery of services that support the safety and health of workers.
- Increase the number of faculty development programs and fellowships in occupational safety and health.

Surveillance Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 9.1, 9.2, 9.3, 9.4, 9.5, and 9.9.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 9.6, 9.8, 9.12, and 9.13.

New surveillance systems are needed to track Objectives 9.7, 9.10, 9.11, 9.14, and 9.15.

High Priority Needs

Current occupational injury and disease surveillance systems have severe limitations, particularly for occupational illnesses with long latencies or with symptoms indistinguishable from nonoccupational diseases. Underreporting is a common problem. Overreporting may also occur where surveillance systems have duplicate or overlapping disease, injury, and fatality categories. Federal (NIOSH, OSHA, NCHS) and State agencies need increased coordination of activities and standardization of methodologies. A single, uniform surveillance system is needed that would do the following:

- Allow accurate assessment of number, external cause, severity, and other characteristics of occupational injuries, illnesses, and deaths.
- Match numerator data (numbers of injuries or illnesses) with denominator data (worker exposures) to identify high-risk populations more precisely.
- Permit comparisons by region, State, and other geographic subdivisions.
- Provide data on the Nation's ten leading work-related diseases and injuries and occupationally caused infectious diseases. They are occupational lung diseases, musculoskeletal injuries, occupational cancers, severe occupational traumatic injuries, occupational cardiovascular diseases, disorders of reproduction, neurotoxic disorders, noise-induced hearing loss, dermatological conditions, and psychological disorders.
- Allow identification of particular groups, such as women, minorities, older or younger workers, who are at elevated risk.

In addition, there is a need to extend surveillance to collect incidence data on work-related illnesses, injuries, and risks in businesses with fewer than 50 employees.

Research Needs

If progress is to continue toward reducing occupational injury fatalities, work-related injuries, work-related illnesses, and cumulative trauma disorders in the U.S. workforce, the following research needs should be addressed:

- Identification of new stressors affecting workers
- New measurement tools for assessing worker exposures
- Biomarkers of workers' exposure and response
- Identification of populations and individuals at special risk of work-related disease and injury
- Mechanisms of insult and intoxication
- Hazard surveillance

- Disease and injury identification and surveillance
- Development of control approaches
- Effective use of controls

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.10 Worksite fitness programs

Nutrition

2.16 Low-fat, low-calorie restaurant food choices

2.20 Worksite nutrition/weight management programs

Tobacco

3.4b Cigarette smoking among blue-collar workers

3.11 Worksite smoking policies

3.12 Clean indoor air laws

Alcohol and Other Drugs

4.14 Worksite alcohol and drug policies

Mental Health and Mental Disorders

6.11 Worksite stress-management programs

Educational and Community-Based Programs

8.6 Worksite health promotion activities

8.7 Health promotion activities for hourly workers

8.11 Programs for racial/ethnic minority groups

Unintentional Injuries

9.1 Unintentional injury deaths

9.2 Unintentional injury hospitalizations

9.3 Motor vehicle crash-related deaths

9.4 Fall-related deaths

9.9 Nonfatal head injuries

9.10 Nonfatal spinal cord injuries

9.12 Motor vehicle occupant protection systems

Environmental Health

11.4 Blood lead levels

11.7 Exposure to toxic agents

11.8 Solid waste

11.9 Safe drinking water

Food and Drug Safety

12.4 Food protection standards

Heart Disease and Stroke

15.16 Worksite blood pressure/cholesterol education programs

Diabetes and Chronic Disabling Conditions

17.5 Activity limitation due to chronic back conditions

17.6 Hearing impairment

17.7 Vision impairment

17.19 Employment of people with disabilities

HIV Infection

18.14 Occupational exposure to HIV

Clinical Preventive Services

21.2 Receipt of recommended services

21.4 Financial barriers to receipt of services

21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.3 Comparable data collection procedures

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Environmental Health

11

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11. Environmental Health

Introduction

Environmental factors play a central role in the processes of human development, health, and disease. Similarly, human factors play a central role in the nature and effects of environmental change. The environmental health priority area points to improvements in the way the Nation responds to factors related to the environment that are thought to have the greatest potential for preventing damage to human health. The science base for many issues in environmental health—information that connects particular toxic exposure to specific diseases—is not well developed. The National Academy of Sciences reported in 1984 that the available information base for 82 percent of major industrial chemicals does not include even minimal testing for their toxic properties or their links to specific diseases.[26] As a result, several objectives in this priority area focus on reducing the total environmental burden of contaminants, rather than on reducing risks from specific etiologic agents. Where the scientific evidence is clear, e.g., lead poisoning, specific objectives to prevent disease are included. In other cases, environmental disease hazards must be identified and followed with more general measures, e.g., reducing total releases of toxic chemicals as a means of reducing diseases caused by exposure to them.

Environmental measures have long been a mainstay of public health. State and local efforts to assure safe supplies of food and water, to manage sewage and municipal wastes, and to control or eliminate vector-borne illnesses have contributed substantially to public health improvements in the United States. But these achievements cannot be taken for granted, and additional achievements are within reach. Infectious agents continue to taint food and water. Animals continue to carry diseases to human populations. Outbreaks of once-common intestinal diseases, although less frequent, still occur. These outbreaks serve as a warning that environmental health programs developed in the first half of the 20th century must be maintained and improved. Public health program managers will be challenged to retain this basic capacity in the 1990s, even as they face expanding responsibilities for dealing with new hazards, many of them chemical. Maintaining activities to prevent effects of well-known and familiar hazards must be carefully pursued along side of work to expand research and monitor developments related to newer, often poorly understood hazards. (For additional detail see *Immunization and Infectious Diseases* and *Food and Drug Safety*.)

The most difficult challenges for environmental health today come not from what is known about the harmful effects of microbial agents; rather they come from what is not known about the toxic and ecologic effects of the use of fossil fuels and synthetic chemicals in modern society. Population growth, urbanization, new energy sources, advanced technology, industrialization, and modern agricultural methods have enabled unprecedented progress. At the same time, they have created hazards to human health that are dramatically different from hazards of the past. Synthetic chemicals, new sources of toxic substances, and naturally occurring radiation are distributed throughout the environment. The potential risks from many of these agents were initially either unrecognized, underestimated, or accepted as inevitable and minor in comparison to the benefits of modernization and economic growth. Public awareness and perceptions have changed. Extensive research programs, carried out in public health and environmental agencies, are under way to determine the potential harmful effects of chemical agents on the environment and health. However, much remains to be done.

Efficient programs to improve environmental health must be based on primary prevention—reductions in the amounts of toxic agents used and released into the environment each year. Additional progress in improving environmental health will come from emphasizing the prevention of human exposure to agents already released. The public health system can support the prevention of toxic contamination and human exposure by improving surveillance and monitoring and also by advancing fundamental knowledge of toxic substances.

A compelling illustration of the conflict between the uncertainty of the science base and potential for cataclysmic human health effects is presented by the challenge of global warming. The earth's temperature is determined primarily by the amount of sunlight received, the amount reflected, and the extent to which the atmosphere retains heat. Water vapor, carbon dioxide, and other trace gases absorb heat from sunlight and warm the lower atmosphere. Human activities have changed the balance of these naturally occurring "greenhouse gases," causing concern among scientists that the earth's temperature might be warmed sufficiently to cause relatively rapid modification of the global temperature. Among the potential effects of global warming are raised sea levels, changes in rainfall patterns with resultant destruction of agricultural areas, and changes in the distribution and occurrence of tropical diseases. Nonetheless, predictions of the timing and extent of global warming are extremely difficult to make. Many feedback mechanisms that slow and hasten, amplify, and diminish global climate change are at work. At present, no consensus exists among environmental scientists about how soon and to what degree global warming will occur or what interventions might be most appropriate.

Implicit in the year 2000 objectives is the recognition that within the next decade additional research is certain to provide a better understanding of the relationship between exposure and adverse health outcomes. For example, since the time the objectives for lead screening were first set for 1990, basic research on the health effects of lead has indicated that its toxicity is greater than previously thought. In addition, health effects have been identified among people with exposures at considerably lower levels than those first found to be toxic.[25] Consequently, objectives for the year 2000 focus on children with blood lead levels above 15 μg/dL, as well as those above the 25 μg/dL action level cited in the 1990 toxic agent and radiation control objectives.

We are just beginning to understand the full range of health effects resulting from exposure to environmental agents. The National Academy of Sciences' study cited above indicates that only a small percentage of thousands of commonly-used chemicals has been adequately tested for the ability to cause or promote cancer. Even fewer have been evaluated for effects on critical organs, such as the neurologic, immunologic, and reproductive systems. Further, little is known about chemical mixtures, which is how most chemicals present themselves to humans. New, sensitive toxicologic methods must be developed and validated for use in screening this huge backlog and the hundreds of new substances introduced each year. The skills of molecular biologists, immunologists, toxicologists, and geneticists must be used to create new tests to identify people with significant exposures to environmental hazards and to help physicians and epidemiologists recognize and respond to subtle, early effects before they progress to irreversible, debilitating, chronic conditions.

There are significant gaps in our knowledge about exposures to environmental agents in both indoor and outdoor air, in ground and surface water, in the atmosphere, in soils and wetlands, and in plants and animals, including sources of human food. Sophisticated methods to identify very small quantities of substances must be adapted to create cost-effective and cost-efficient methods for making accurate measures of environmental contamination over significant periods of time.

Finally, we must conduct the research necessary to reduce the uncertainties inherent in current environmental risk estimates and to develop improved risk assessment models. And we must learn how to educate the public about environmental risks along with rational and useful suggestions for protecting against environmental risks.

At the Federal level, authority for regulating environmental hazards resides primarily with the Environmental Protection Agency (EPA). EPA was established in 1970 and has since been given increasing regulatory and program authority to prevent and/or clean up contamination of air, water, and land. Most State and local governments followed the Federal lead in creating environmental protection agencies.

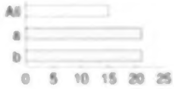
What follows are national—not Federal—objectives to improve environmental health. These objectives, which are intended to support the programs of the Federal Environmental Protection Agency and State environmental protection programs, cannot be achieved without partnerships among industries, individuals, employers, community groups, and all levels of government. The complexity and the magnitude of these issues will require a strong and sustained national collaboration.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

11.1 Reduce asthma morbidity, as measured by a reduction in asthma hospitalizations to no more than 160 per 100,000 people. (Baseline: 188 per 100,000 in 1987)

Special Population Targets

	Asthma Hospitalizations (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
11.1a	**Blacks and other nonwhites**	**334**	**265**	
11.1b	**Children**	**284**†	**225**	

†*Children aged 14 and younger*

Baseline data source: National Hospital Discharge Survey, CDC.

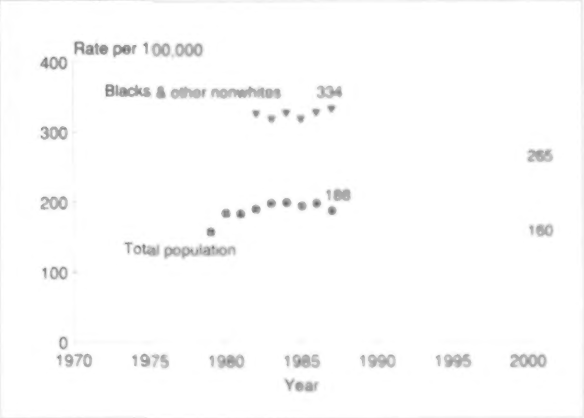


Fig. 11.1

Asthma hospitalization rates

Asthma is a serious chronic condition that affects approximately 10 million Americans. People with asthma experience over 100 million days of restricted activity annually, and costs for asthma exceed $4 billion each year. Asthma is much more common among children than adults. For example, in 1987, 5.2 percent of people under age 17 had asthma, compared to 3.9 percent of people aged 65 and older. There is no difference in asthma prevalence by gender. Although hospitalizations for asthma are more common among blacks, the proportion of blacks with asthma is only slightly higher than whites (4.4 percent versus 4 percent, respectively).[24]

The reported prevalence of asthma is increasing. Between 1979 and 1987, the percent of the population with asthma increased by about one-third; increases in asthma have been reported in all age, race, and sex groups. In 1987, there were over 450,000 hospitalizations for asthma, with rates rising especially fast among children. Between 1979 and 1987, the hospitalizations rose by 43 percent among children aged 15 and younger, from 198 to 284 discharges per 100,000 children.[24] Environmental factors, such as ozone and other air pollutants, may have contributed to rising morbidity and mortality. In addition, indoor air pollutants, particularly biological pollutants, formaldehyde, and combustion-related pollutants are associated with increased morbidity among people with asthma.

The death rate from asthma among blacks is 3 times as high as the rate among whites. Reasons for the discrepancy are unclear, although some evidence suggests that they may be related both to the level of health care services and to environmental factors (e.g. residing in urban areas where air pollution may be more prevalent). Given recent advances in treating asthma and technological developments in toxic agent control, many asthma deaths should be preventable.

The National Heart, Lung, and Blood Institute of the National Institutes of Health, and other professional and private organizations (e.g., the American Lung Association and the American Thoracic Society) have targeted asthma for major efforts to reduce morbidity and mortality. Primary prevention through identification and reduction or elimination of environmental risk factors is a critical part of their efforts. National progress in reducing air pollution should contribute to reductions in asthma hospitalizations.

11.2* Reduce the prevalence of serious mental retardation among school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

Baseline data source: Metropolitan Atlanta Developmental Disabilities Study, CDC.

*For commentary, see Objective 17.8 in *Diabetes and Chronic Disabling Conditions* and Objective 11.4 below related to blood lead levels.

11.3 Reduce outbreaks of waterborne disease from infectious agents and chemical poisoning to no more than 11 per year. (Baseline: Average of 31 outbreaks per year during 1981-88)

Type-Specific Target

	Average Annual Number of Waterborne Disease Outbreaks	*1981-88 Baseline*	*2000 Target*
11.3a	**People served by community water systems**	**13**	**6**

Note: Community water systems are public or investor-owned water systems that serve large or small communities, subdivisions, or trailer parks with at least 15 service connections or 25 year-round residents.

Baseline data source: Waterborne Surveillance System, CDC.

Between 1971 and 1988, a total of 564 waterborne outbreaks, affecting approximately 140,000 people, were reported in the United States. A waterborne disease outbreak is an incident in which (1) two or more people experience a similar illness after consumption or use of water intended for drinking and (2) epidemiologic evidence implicates water as the source of illness. A single case of chemical poisoning constitutes an outbreak if laboratory studies indicate that the water has been contaminated by a chemical.[6] The most frequent conditions caused by waterborne pathogens were gastroenteritis of unknown etiology (279 outbreaks), giardiasis (103 outbreaks), and chemical poisoning (55 outbreaks). Chemical poisoning outbreaks in particular have grown in number, increasing from only one reported outbreak between 1920 and 1940, four reported outbreaks between 1941 and 1960, nine between 1961 and 1970, to 55 outbreaks between 1971 and 1988. In contrast, typhoid fever dominated waterborne outbreaks in the two-decade period from 1920 to 1940 (372 of 530 outbreaks), but accounted for only five outbreaks between 1971 and 1988.[10]

The number of outbreaks of waterborne disease reported to CDC and EPA has tripled since 1961. In the five-year period, 1961 through 1965, 56 outbreaks were reported, compared to 202 reported from 1976 through 1980, and 176 from 1981 through 1985. The number of outbreaks reported in recent years is similar to the numbers reported in the late 1930s and 1940s. Since 1971, 49 percent of 502 investigated outbreaks have been attributed to untreated well water and another 24 percent to untreated or inadequately disinfected/filtered surface water (from lakes, rivers, streams). In 201 outbreaks in which the etiologic agent was identified, *Giardia* was the most common pathogen (37 percent). Other etiologic agents include *Shigella* (13 percent), hepatitis A (9 percent), viral gastroenteritis (8 percent), *Campylobacter* (4 percent), and Salmonella (4 percent).

Twenty percent of reported outbreaks were due to chemical poisoning. In 50 percent of outbreaks, however, the etiologic agent was not identified.[9]

Five States (Colorado, Oregon, Pennsylvania, Vermont, and Washington), with 9.7 percent of the United States population, reported 42 percent of all waterborne outbreaks between 1971 and 1985,[9] suggesting that much of the State-to-State variation is from variations in the completeness of reporting. The waterborne outbreak reporting system is voluntary and is maintained by CDC and EPA; the two agencies have cooperated in collecting waterborne outbreak data since 1971.[6] The true number of outbreaks may be substantially higher than reported. This objective is expected to increase attention to waterborne outbreaks, and thus, to surveillance and reporting of these outbreaks. Increased surveillance will result in, at least through 1995, an increase in the number of outbreaks reported and investigated.

Implementation and enforcement of the 1986 amendments to the Safe Drinking Water Act and adoption of the National Primary Drinking Water regulations for maximum levels of microbiologic contaminants should reduce the number of outbreaks due to infectious agents. The overall target for this objective implies return to waterborne outbreak rates observed between 1951 and 1960. A target has been included for community water systems because surveillance and reporting from these systems is more complete than for the entire universe of water suppliers. Inclusion of this target will aid in tracking outbreaks and measuring real improvement in waterborne outbreak prevention.

Improved surveillance and reporting of outbreaks are essential to preventing future outbreaks. Early engineering evaluation of water treatment systems increases detection of operational problems that are related to outbreaks. Expansion of programs testing well water could also play a role in reducing the incidence of waterborne disease.

Achievement of this objective requires the coordinated efforts of CDC, EPA, the Council of State and Territorial Epidemiologists, State regulatory agencies, State epidemiologists, and university research programs in water sampling and treatment.

11.4 Reduce the prevalence of blood lead levels exceeding 15 μg/dL and 25 μg/dL among children aged 6 months through 5 years to no more than 500,000 and zero, respectively. (Baseline: An estimated 3 million children had levels exceeding 15 μg/dL, and 234,000 had levels exceeding 25 μg/dL, in 1984)

Special Population Target

	Prevalence of Blood Lead Levels Exceeding 15 μg/dL & 25 μg/dL	*1984 Baseline*	*2000 Target*
11.4a	**Inner-city low-income black children (annual family income <$6,000 in 1984 dollars)**	**234,900 & 36,700**	**75,000 & 0**

Baseline data sources: National Health and Nutrition Examination Survey, CDC; Agency for Toxic Substances and Disease Registry.

High blood lead levels are among the most prevalent childhood conditions and the most prevalent environmental threat to the health of children in the United States. Childhood lead poisoning is totally preventable. Judging by progress since 1978, the year 2000 objective should be considered an interim step toward a year 2010 objective of eliminating elevated blood lead levels in the United States. Decreased levels of lead in gasoline, air, food, and releases from industrial sources have resulted in lower mean blood lead levels. However, lead in paint, dust, and soil in inner-city urban areas has been reduced only to a limited extent. Lead in the home environment is the major remaining source of human lead exposure in the United States.

The 1988 Agency for Toxic Substances and Disease Registry report on the extent of lead poisoning in the United States estimated that, based on projections from the National Health and Nutrition Examination Survey (NHANES) II, in 1984, in standard metropolitan statistical areas, there were 2.4 million white and black children aged 6 months through 5 years with blood levels above 15 µg/dL and 200,000 children above 25 µg/dL. This would correspond to approximately 3 million and 250,000, respectively, for all children six months through five years in the total U.S. population. Of the approximately 350,000 inner-city black children aged 6 months through 5 years, with annual family incomes of less than $6,000, more than two-thirds were estimated to have blood lead levels above 15 µg/dL, and 36,700 (10.6 percent) to have blood lead levels above 25 µg/dL.[1] Blood lead levels indicating cause for concern when found in children have been lowered over the past several decades because of new health information.

Health effects of highly elevated lead levels include coma, convulsions, profound irreversible mental retardation and seizures, and death. Even low levels of exposure can result in persistent impairments in central nervous system function, especially in children, including delayed cognitive development, reduced I.Q. scores, impaired hearing, adverse impacts on blood production, vitamin D, and calcium metabolism (which have far-reaching physiological effects), and growth deficits. There may also be significant adverse effects on fetuses through prenatal exposure. In adults, lead in the blood may interfere with hearing, increase blood pressure and, at high levels, cause kidney damage and anemia.[1]

Cooperative efforts with agencies outside the Department of Health and Human Services, such as EPA, the Department of Housing and Urban Development, and State and local childhood lead poisoning prevention programs are critical to achieving this objective. Further, close working efforts must be established with occupational health authorities to assure that the removal of lead-based paint from homes is performed in a safe fashion, protecting both residents and the workers performing the removal. A national strategy to eliminate exposure is critical to achieving this objective.

Risk Reduction Objectives

11.5 Reduce human exposure to criteria air pollutants, as measured by an increase to at least 85 percent in the proportion of people who live in counties that have not exceeded any Environmental Protection Agency standard for air quality in the previous 12 months. (Baseline: 49.7 percent in 1988)

Proportion Living in Counties That Have Not Exceeded Criteria Air Pollutant Standards in 1988 for:

Ozone	53.6%
Carbon monoxide	87.8%
Nitrogen dioxide	96.6%
Sulfur dioxide	99.3%
Particulates	89.4%
Lead	99.3%
Total (any of above pollutants)	49.7%

Note: An individual living in a county that exceeds an air quality standard may not actually be exposed to unhealthy air. Of all criteria air pollutants, ozone is the most likely to have fairly uniform concentrations throughout an area. Exposure is to criteria air pollutants in ambient air. Due to weather fluctuations, multi-year averages may be the most appropriate way to monitor progress toward this objective.

Baseline data source: Office of Air and Radiation, EPA.

Air pollution is one of the greatest known environmental risks to human health. According to EPA, the list of health problems brought on or exacerbated by one or another airborne pollutant includes: lung diseases, such as chronic bronchitis and pulmonary emphysema; cancer, particularly lung cancer; bronchial asthma; and eye irritation.[15] In addition, animal studies have raised concerns that ozone in particular may reduce peoples' ability to fight respiratory infection and that frequent exposure may cause permanent lung damage.[11] According to the American Lung Association, the annual health costs of human exposure to all outdoor criteria air pollutants from all sources range from $40 to $50 billion, with an associated 50,000 to 120,000 premature deaths.[5]

The Federal Clean Air Act of 1970, amended in 1977, requires EPA to establish primary ambient air standards that include an adequate margin of safety to protect the most sensitive groups of people from the hazardous effects of certain air pollutants known as the criteria pollutants. Primary standards are levels of a pollutant during prescribed time periods which, when exceeded, are considered by EPA to present unacceptable risks to human health. EPA has set primary standards for ozone, carbon monoxide, particulates, sulfur dioxide, nitrogen dioxide, and lead, but levels (particularly for ozone) are exceeded for significant time periods in most large metropolitan areas of the United States each year. The President's proposals for revising the Clean Air Act are intended to go beyond even the targets for this objective in reducing human exposure to criteria air pollutants by implementing control measures that will bring virtually all urban areas into compliance with EPA standards by the year 2000.

Although air quality has improved greatly since 1970 (e.g., average sulfur dioxide levels decreased about 30 percent from 1979 through 1988), achievement of the standards has been uneven and contamination problems remain widespread.[14] Ozone is the most widespread and intractable problem. Standards for carbon monoxide and particulate matter continue to be exceeded in some areas; most areas are in compliance with sulfur dioxide, nitrogen dioxide, and lead standards. While elevated carbon monoxide levels tend to be localized within part of a given reporting area, elevated ozone levels are usually more evenly spread over the entire reporting area population.

For the period 1986 through 1988, EPA reported that the National Primary Ambient Air Standard for ozone was exceeded (i.e., more than one maximum daily 1-hour average with a level greater than 0.12 parts per million) in 101 air quality reporting areas, an increase of 37 areas from the 1985 through 1987 period. This increase has been attributed, in part, to unusual summer weather in 1988. For the years 1987 and 1988, the standard for carbon monoxide standard was exceeded in 44 areas, 8 fewer than for the period 1986 through 1987.[5]

Motor vehicles account for approximately one-quarter of reactive hydrocarbon emissions (major precursors for ambient ozone) and one-third of nitrogen oxide. Motor vehicle contributions to particulate and sulfur dioxide emissions account for approximately 20 and 4 percent respectively.[5] In addition, motor vehicles account for approximately 60 percent of annual carbon monoxide emissions. Application of technologies used to reduce motor vehicle emissions and efforts to curb contamination from other sources have not yet been adequate to meet the standards established under the Clean Air Act.

11.6 Increase to at least 40 percent the proportion of homes in which homeowners/occupants have tested for radon concentrations and that have either been found to pose minimal risk or have been modified to reduce risk to health. (Baseline: Less than 5 percent of homes had been tested in 1989)

Special Population Targets

	Testing and Modification As Necessary	*Baseline*	*2000 Target*
11.6a	**Homes with smokers and former smokers**	—	**50%**
11.6b	**Homes with children**	—	**50%**

Baseline data sources: Office of Radiation Programs, EPA; Center for Environmental Health and Injury Control, CDC.

Radon is a unique environmental problem because it occurs naturally. Most indoor radon comes from the rock and soil beneath buildings and enters structures through cracks or openings in foundations or basements. When inhaled, radon decay products release ionizing radiation that can damage lung tissue and lead to lung cancer. EPA estimates that up to eight million homes may have radon levels exceeding four picocuries per liter of air, the level at which EPA recommends corrective action.[15] Knowledge about the effects of radon as an indoor air hazard has developed rapidly in recent years; radon now leads a growing list of indoor air hazards, including tobacco smoke, formaldehyde, asbestos, and organic chemicals.

EPA estimates that approximately 20,000 cases per year of lung cancer occur as a result of radon exposure. The National Academy of Sciences has noted that cigarette smoke acts synergistically with radon gas in causing lung cancer, amplifying the effects of cigarette smoke on lung cancer rates.[8] A special population target to increase testing in the homes of smokers and former smokers is included to give particular emphasis to reducing radon exposure among cigarette smokers.

Households with children also should be targeted for radon testing and mitigation. Children may be at higher risk than adults from indoor radon because they receive a higher dose per unit of exposure than adults. Further, children tend to be more sensitive to the carcinogenic effects of radiation. According to the International Commission of Radiologic Protection, those aged 20 and younger who are exposed to radon appear to have a higher risk of developing lung cancer than those exposed later in life.[20] As with smoking, the risk of lung cancer may decrease over time once exposure is eliminated. If excess radon exposure is eliminated in childhood, individual risk of lung cancer may be substantially reduced before middle age when lung cancer tends to occur.

Although the objective targets dramatic increases in the proportions of homes tested for radon and modified to reduce risk, the objective is thought to be attainable because of: (1) the low cost and ease of radon testing ($15 to $40 per test kit; no special training needed to perform the test); (2) the relative ease of mitigation; and (3) the increasing number of new homes with low radon levels due to installation of radon-resisting features.

11.7 Reduce human exposure to toxic agents by confining total pounds of toxic agents released into the air, water, and soil each year to no more than:

0.24 billion pounds of those toxic agents included on the Department of Health and Human Services list of carcinogens. (Baseline: 0.32 billion pounds in 1988)

2.6 billion pounds of those toxic agents included on the Agency for Toxic Substances and Disease Registry list of the most toxic chemicals. (Baseline: 2.62 billion pounds in 1988)

Baseline data source: Toxic Chemical Release Inventory, EPA.

According to EPA, toxic pollutants are one of today's most serious emerging problems. Toxic substances are found in all environmental media. Despite low concentrations, toxic chemicals emitted into the air by human activities may have serious short-term and long-term effects on human health.[15] More than 300 chemicals released by manufacturers and others into the air, soil, and water are tracked by the EPA Toxic Chemical Release Inventory. Once released, these toxic substances are available for human intake. Persistent substances may accumulate in the environment and in the food chain.

Benzene, for example, is a heavily used toxic substance that occurs naturally and is present in consumer products and waste. Adverse health effects of benzene vary with the duration of exposure and the amount of substance available for exposure. Health effects range from drowsiness, dizziness, and headache, to anemia, internal bleeding, and leukemia. Some studies also suggest that benzene is harmful to the immune system and may increase the chance for infections and growth of tumors. There are also indications of adverse effects on reproduction, resulting in lowered birth weight, delayed bone formation, and bone marrow damage in the fetus. The main routes of human exposure to benzene are through use of consumer products, releases into the environment, and occupational exposure. Consumer exposure is most often through pumping gasoline and through tobacco smoking. Environmental and occupational exposure is generally through industrial activity. Ethylbenzene and styrene production facilities, petroleum refineries, chemical manufacturing plants, and recovery plants for coke oven by-products may release benzene into the air and expose people who live and work nearby. Because of benzene's evaporative nature, human exposure usually occurs through breathing air containing the chemical, although oral and dermal exposure is possible.[3]

Many sources emit toxic chemicals into the atmosphere: industrial and manufacturing facilities, solvent use, sewage treatment plants, hazardous waste handling and disposal sites, incinerators, and motor vehicles. Smelters, metal refiners, manufacturing processes, and stationary fuel combustion sources emit such toxic metals as cadmium, mercury, and beryllium. Toxic organics, such as vinyl chloride and benzene, are released by a variety of sources, such as plastics and chemical manufacturing plants, and gas stations. Chlorinated dioxins are emitted by some chemical processes and by the high-temperature burning of plastics in incinerators. Once toxic contaminants are emitted from a smoke stack or tail pipe, people may be exposed to them in a variety of ways. The most common exposure is through inhalation. Indirect exposure may occur after airborne particles fall to earth and are taken up by crops, animals, or fish that we consume. Particles may also contaminate the water we drink. Through these routes, some toxins accumulate over time and become highly concentrated in human fatty tissue and breast milk.[15]

The public has become increasingly concerned about the risks of exposure to toxic chemicals. In 1984, a release of toxic gas from a pesticides plant in Bhopal, India, killed or seriously injured thousands of people. That tragedy, followed by a chemical release in West Virginia, set in motion several emergency planning and information gathering activities.[16] The culmination of these activities was passage of the Emergency Planning and Community Right-to-Know Act, Title III of the Superfund Amendments and Reauthorization Act (SARA, Public Law 99-499), in 1986.

The Act was intended to help communities deal safely and effectively with the many hazardous substances that are used in society. The law establishes requirements for (1) local, State, and Federal governments and industry regarding emergency planning and emergency release notification and (2) community right-to-know reporting on hazardous and toxic chemicals. Certain businesses are required to submit reports on the hazardous material that they manufacture, use, store, process, and release into the environment. Facilities must account for total aggregate releases to the environment of more than 300 toxic chemicals (listed under Section 313 of Title III) for each calendar year. These aggregate data are referred to as the Toxic Chemical Release Inventory (TRI).

The TRI database allows analyses of toxic chemicals released into the environment annually and creates unprecedented opportunities to encourage industry to reduce production and use of toxic chemicals and to monitor progress in reducing toxic chemical use along with other measures to improve the health of the Nation.

The science base relating specific chemicals to specific diseases is poorly developed. Thus, this objective is based on the premise that reductions in the release of toxic chemicals will enhance efforts to reduce toxic-chemical-related illnesses among Americans for decades into the future. The objective also assumes that it is imprudent—in terms of protecting public health—to wait until disease-toxin relationships are completely and precisely characterized. Changes in manufacturing and processing methods that reduce release of toxic substances will reduce risks to human health.

Specific targets for toxic chemicals included on the ATSDR list of the most hazardous chemicals and the Department of Health and Human Services's list of carcinogens are included in the objective to focus particular attention on those substances that are known to have very serious health consequences.

Achievement of this objective is contingent on voluntary actions of American manufacturers and producers to reduce or prevent release of toxic material. As testimony to its importance, the Monsanto Corporation made a public commitment to cut its toxic air emissions worldwide by 90 percent by 1992 and has established a corporate goal of zero toxic air emissions. Other corporations have made public commitments to significantly reduce toxic air emissions over the next decade.

Title III reporting is new for localities, States, the Federal government, manufacturers, processors, users, and the public. Moreover, the reporting requirements are being phased in over time, gradually covering facilities with smaller annual releases. As a result, in the early years of TRI data collection, more errors of estimation will occur in reporting and some facilities will not submit required reports.

11.8 Reduce human exposure to solid waste-related water, air, and soil contamination, as measured by a reduction in average pounds of municipal solid waste produced per person each day to no more than 3.6 pounds. (Baseline: 4.0 pounds per person each day in 1988)

Baseline data source: *Characterization of Municipal Solid Waste in the United States: 1990 Update*, EPA.

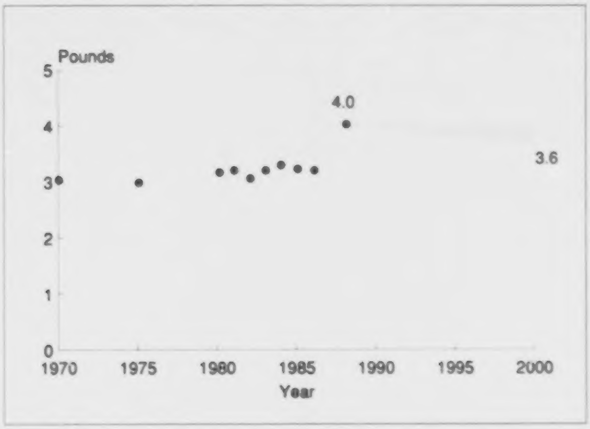


Fig. 11.8i

Average pounds of municipal solid waste produced per person each day

The city of Chicago creates more than 7,500 tons of garbage each day. New York City produces more than 25,000 tons and Los Angeles County more than 50,000 tons. On average, each person in America generates about 4 pounds of municipal solid waste per day, more than twice as much as people in other industrialized countries (with the exception of Canada).[15]

When disposed of improperly, common household waste can contribute to health problems ranging from noxious smoke from burning trash to creation of breeding grounds for rats, flies, and mosquitoes. In addition, household waste can contribute to air and water contamination because small quantities of toxic substances such as pesticides, paints, or solvents are sometimes dumped with other household trash. Rain water seeping through the buried wastes can form "leachate" that percolates down through the soil and contaminates ground water. Other organic wastes, such as garbage and paper products, decompose and can form explosive methane gas.[15] Methane, like carbon dioxide, absorbs heat from sunlight and may contribute to global warming. Methane is the second leading "greenhouse" gas, behind carbon monoxide and surpassing chlorofluorocarbons.[18] Therefore, in addition to reduction of solid waste production, careful monitoring to ensure proper land disposal is important.

Similarly, if communities incinerate their solid waste in improperly designed and maintained incinerators, toxic air pollution can result. For example, cadmium and cadmium compounds can be released through incineration. Once cadmium is released into the air, human exposure can occur through food, water, or inhalation. Exposure can cause many adverse health effects. Short-term inhalation of high levels of the substance causes severe irritation to the lungs. More common exposures are long-term and involve lower levels of cadmium. Such exposures can result in kidney and lung damage, including lung cancer. Other tissues reported to be injured by cadmium exposure in animals or humans include the liver, the testes, the immune system, the nervous system, and blood.[2]

Actions necessary to improve environmental health go well beyond regulation and the Federal government. People can help reduce contaminants in their air, water, and soil by encouraging their schools, businesses, and employers to purchase recycled products; avoiding products overpackaged with paper, plastic, plastic foam, or other materials; using reusable tableware and encouraging local restaurants to avoid throwaway tableware; making a compost pile for lawn trash; and avoiding one-use consumer goods (e.g., disposable razors, cigarette lighters).

Recycling may also help reduce air, water, and soil contamination. For example, recycling, when compared to energy use and contaminant production of original manufacture, results in lower energy consumption, reduced water use, and less air and water contamination:[29]

Reduction (percentage)	*Aluminum*	*Steel*	*Paper*	*Glass*
Energy use	90-97%	47-74%	23-74%	4-32%
Air contaminants	95%	85%	74%	20%
Water contaminants	97%	76%	35%	—
Mining wastes	—	97%	—	80%
Water use	—	40%	58%	50%

Fig. 11.8ii

Environmental benefits derived from recycling materials

Recycling one ton of paper is estimated to preserve about 20 trees (which produce oxygen and reduce accumulation of greenhouse gases), two barrels of oil, 7,000 gallons of water, 4,100 kilowatt hours of electricity (enough energy to power the average American home for five months), prevents emission of 60 additional pounds of toxic agents into the air, and saves three cubic yards of landfill space.[29]

Concerted efforts by private citizens, local, State, and Federal governments, public health departments, and community associations would facilitate achievement of this objective.

11.9 Increase to at least 85 percent the proportion of people who receive a supply of drinking water that meets the safe drinking water standards established by the Environmental Protection Agency. (Baseline: 74 percent of 58,099 community water systems serving approximately 80 percent of the population in 1988)

Note: Safe drinking water standards are measured using Maximum Contaminant Level (MCL) standards set by the Environmental Protection Agency which define acceptable levels of contaminants. See Objective 11.3 for definition of community water systems.

Baseline data source: Office of Drinking Water, EPA.

Drinking water is supplied to 200 million Americans (approximately 80 percent of the population) by 58,000 community water systems and to nonresidential locations such as campgrounds, schools, and factories by 160,000 small scale suppliers (serving between 25 and 3,300 people). The remainder of the population is served by private wells, surface water, cisterns, and springs. Small suppliers manage the majority of water systems in the Nation that are not in compliance with national drinking water standards. About one-third of these small systems exceed Maximum Contaminant Levels for contaminants in drinking water or do not meet reporting requirements. EPA has promulgated MCLs for 30 substances; MCLs for an additional 40 substances are expected to be promulgated by the end of 1990. Noncompliance may increase when these additional contaminants are included in compliance standards.[15] Thus, this objective is particularly challenging.

The most acute and severe public health effects from contaminated water, such as cholera and typhoid, have been eliminated in the United States. However, hazards remain in the Nation's drinking water supply. Of particular interest are radionuclides, lead, chlorine-resistant microbiological contaminants, and disinfection by-products. For example, radionuclides are radioactive isotopes that emit radiation as they decay. The most frequently occurring radionuclides in drinking water are uranium, radium, and radon, which are naturally occurring. Radon is by far the most common and poses the greatest risk. Ingestion of uranium and radium may cause cancer of the bone and kidney.

Community water systems, especially small systems, often lack funds necessary to finance improved water treatment. Systems may also lack access to capital and face consumer resistance to rate increases to finance system improvements. Meeting this objective will require improved public and professional appreciation of the risks of contaminated drinking water and increased willingness of the public to pay for improved drinking water quality.

11.10 Reduce potential risks to human health from surface water, as measured by a decrease to no more than 15 percent in the proportion of assessed rivers, lakes, and estuaries that do not support beneficial uses, such as fishing and swimming. (Baseline: An estimated 25 percent of assessed rivers, lakes, and estuaries did not support designated beneficial uses in 1988)

Note: Designated beneficial uses, such as aquatic life support, contact recreation (swimming), and water supply, are designated by each State and approved by the Environmental Protection Agency. Support of beneficial use is a proxy measure of risk to human health, as many pollutants causing impaired water uses do not have human health effects (e.g., siltation, impaired fish habitat).

Baseline data source: Office of Water Regulation and Standards, EPA.

Nonpoint sources of water contamination, as opposed to single "point" sources such as a discharge pipe from a factory, are the largest source of water pollution, contributing 65 percent of the contamination in impaired rivers, 76 percent in impaired lakes, and 45 percent in impaired estuaries.[15] Primary nonpoint sources of contamination include water runoff from farming, urban areas, mining, forestry, and construction. Runoff may carry oil and gasoline, agricultural pesticides, herbicides and fungicides, heavy metals and other toxic substances, as well as bacteria, viruses, silt, nutrients, and oxygen-demanding compounds.

Contaminated surface water can result in adverse health effects. For example, people can be exposure to toxic chemicals that accumulate in fish and shellfish taken from contaminated waters that are consumed. One such toxic chemical is chlordane, a once commonly used pesticide to control insects on food crops and termites in homes that causes damage to the liver and central nervous system when consumed by animals. Chlordane also causes cancer in laboratory animals that are given high doses over the course of their lifetimes.

Nonpoint sources of surface water contamination are not the only culprit. Toxicants continue to pass through municipal waste water treatment plants that are not equipped to deal with them: in 1986 an estimated 37 percent of the toxic industrial compounds entering surface waters passed through treatment plants.[15] Between 1971 and 1985, 24 percent of investigated waterborne outbreaks were attributed to bacteria or viruses from untreated or inadequately disinfected/filtered waste water.[10]

To prevent adverse human health effects due to consumption of contaminated fish and exposure to fecal coliform bacteria, better coordination among State and local health agencies and water quality monitoring agencies is needed. Improved coordination would lead to improvements in the States' ability to locate problem areas and to greater consistency in the issuance of fishing advisories. In 1988, the States issued 586 fishing advisories and 135 bans. Fecal coliform bacteria contribute to impairment (contamination) in 48 percent of impaired estuary square miles, 19 percent of impaired stream miles, and 9 percent of impaired lake acres in 1990.[17] These two measures, fishing advisories and extent of fecal coliform contamination, are supplemental measures of progress toward this objective.

Meeting this objective will require a broad range of actions, including such steps as: modified farming techniques to minimize pesticide and fertilizer runoff; changes in lawn watering and fertilizing practices; improving community waste water treatment; and reducing releases of toxic chemicals. As with many of the environmental health objectives, this objective to reduce contamination of surface water cannot be met without concerted efforts by individuals, corporations, communities, and governments. Reporting under this objective will evolve over the decade as States improve their ability to monitor, assess, and report water quality.

Services and Protection Objectives

11.11 Perform testing for lead-based paint in at least 50 percent of homes built before 1950. (Baseline data available in 1991)

There are a number of sources of environmental lead exposure, including contaminated air and water supplies. A very important route of exposure in children is the ingestion of lead-based paint chips, lead-impregnated plaster, or contaminated dust or dirt found in dilapidated homes, particularly those built before 1950.[22] These building conditions are found most commonly in low-income neighborhoods. As a result, about 19 percent of black children who are poor or who live in the center of large American cities have lead levels above 30 µg/dL.[22] When lead exposure estimates are stratified according to national socioeconomic and demographic variables, no economic or racial subgroup of children is exempt from the risk of having lead exposure that is sufficiently high to cause adverse health effects. Nevertheless, the prevalence of elevated lead levels in inner-city, underprivileged children remains the highest among the various strata.

Compared to other sources of environmental exposure, the home environment is the least regulated and the most dependent upon individual awareness and initiative. Specific knowledge possessed by people is essential to corrective action. Active participation and intervention by residents and homeowners is a necessary component of lead exposure abatement. However, some homeowners are unable to afford extensive home repair or renovation to reduce lead exposure. Lead paint abatement can be costly, with costs ranging from $3,000 to $15,000 per home.[7] Thus, to reduce lead toxicity among children, it may be necessary for governments to perform lead-based paint testing and abate lead hazards.

A related issue is lead in drinking water. The primary source of lead in drinking water is corrosion of plumbing materials, such as lead service lines and lead solders, in water distribution systems and in houses and larger buildings. Virtually all public water systems serve households with lead solders of varying ages, and most faucets are made of materials that can contribute some lead to drinking water. Safe drinking water is addressed above in objective 11.9.

11.12 Expand to at least 35 the number of States in which at least 75 percent of local jurisdictions have adopted construction standards and techniques that minimize elevated indoor radon levels in those new building areas locally determined to have elevated radon levels. (Baseline: 1 State in 1989)

Note: Since construction codes are frequently adopted by local jurisdictions rather than States, progress toward this objective also may be tracked using the proportion of cities and counties that have adopted such construction standards.

Baseline data source: Environmental Law Institute.

Many indoor hazards are related to construction materials now prohibited in new construction (e.g., asbestos and lead), or to chemicals whose applications are regulated (e.g., termiticides). Elevated radon levels, however, can be prevented most effectively by using proper construction techniques in new buildings to prevent radon accumulation. Radon in homes arises largely from underground radon gas seeping into buildings where concentrations can build up to dangerous levels. EPA has developed guidelines on action levels and appropriate testing and mitigation measures.[27] EPA and State agencies have also developed abatement techniques for reducing radon concentrations in homes, generally by preventing radon entry or hastening its exit.[12] At present, only a small proportion of all houses in high-risk radon areas have been appropriately tested and effectively mitigated.

The potential for disease would be greatly reduced if new homes were constructed to prevent elevated radon concentrations. Further, it is more cost-effective to design houses to prevent radon buildup than to conduct abatement in houses already constructed. Construction standards and techniques for preventing radon buildup are now being developed by EPA in association with the National Association of Home Builders National Research Center and other organizations. Achievement of this objective will require widespread or universal adoption of the standards and techniques by model building code organizations and subsequent adoption of the codes at the local level.

Although this objective focuses on radon, building codes at the State and local levels may be the preferred mechanism for dealing with other indoor hazards that are not likely to be addressed by national standards or legislation, such as adequate ventilation.

11.13 Increase to at least 30 the number of States requiring that prospective buyers be informed of the presence of lead-based paint and radon concentrations in all buildings offered for sale. (Baseline: 2 States required disclosure of lead-based paint in 1989; 1 State required disclosure of radon concentrations in 1989; 2 additional States required disclosure that radon has been found in the State and that testing is desirable in 1989)

Baseline data sources: Public Health Foundation; Environmental Law Institute.

Environmental regulations have been effective in reducing lead in gasoline, air, food, and water. Lead is also controlled effectively in paint available for new homes. Abatement of lead in homes built prior to 1950, but also including homes built in the 1950s, 1960s, and early 1970s, has proceeded slowly and in many cases ineffectively. A great variety of State and local lead standards exists, but many lack enforcement and have been of limited benefit. Elevated radon concentrations are a more recently recognized environmental threat that, like lead-based paint, are best controlled through home testing and modification.

Lack of sufficient public knowledge is a critical factor in controlling both radon and lead hazards because, in many cases, neither the occupant nor the seller or buyer of a house is aware of these hazards. Real estate transaction disclosure regulations can stimulate abatement programs by forcing consideration of these issue at the most opportune time, e.g., during transfer of the property.

Although this objective focuses on lead and radon, real estate transaction regulations may also apply to other indoor problems in homes and commercial buildings, such as hazards related to asbestos, formaldehyde, contamination of private wells, and certain termiticides.

11.14 Eliminate significant health risks from National Priority List hazardous waste sites, as measured by performance of clean-up at these sites sufficient to eliminate immediate and significant health threats as specified in health assessments completed at all sites. (Baseline: 1,082 sites were on the list in March of 1990; of these, health assessments have been conducted for approximately 1,000)

Note: The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 required the Environmental Protection Agency to develop criteria for determining priorities among hazardous waste sites and to develop and maintain a list of these priority sites. The resulting list is called the National Priorities List (NPL).

Baseline data sources: *Federal Register* March 14, 1990 EPA National Priorities List Update (final rule); 55 FR vol 55 no 50 p. 9688; Agency for Toxic Substances and Disease Registry.

At the Federal level, responsibility for cleaning up hazardous waste sites resides primarily with EPA. EPA is charged with assuring safe cleanup of the most serious hazardous waste sites in the United States, that is, those on the National Priorities List. The Public Health Service, through ATSDR, is responsible for evaluating potential health hazards at NPL sites. As of 1989, ATSDR has conducted full or preliminary health assessments for approximately 1,000 NPL sites.

According to EPA, uncontrolled disposal sites containing hazardous wastes and other contaminants present some of the most serious environmental problems our nation has ever faced.[15] Toxic substances from these sites can contaminate ground water and lead to other direct human exposures.

ATSDR's health assessments and EPA's risk assessments are sources of information about links between releases of hazardous substances at NPL sites and public health effects. Both provide information on the toxicity of substances found at NPL sites, pathways of human exposure, and populations at risk for exposure. Health assessments also provide health findings, recommendations for protecting human health, and recommendations for additional studies. Assessments may indicate (1) measures needed to prevent continued human exposure to toxic substances or (2) potentially hazardous contamination that should be addressed in determining the most effective clean up of the site.

ATSDR's health assessment recommendations to prevent further human exposure to toxic chemicals may include: (1) alternate water supplies; (2) restriction of site access; (3) further environmental sampling; (4) clean up or removal actions; and (5) health referrals. Once ATSDR issues its recommendations, they are addressed by EPA in its site remediation plan. As necessary, ATSDR may conduct additional health assessments at sites to insure that no further adverse health effects result from exposure to substances. Through this objective, ATSDR will continue working with EPA toward a national goal of reducing, and eliminating where possible, the adverse health effects of environmental contamination.

11.15 Establish programs for recyclable materials and household hazardous waste in at least 75 percent of counties. (Baseline: Approximately 850 programs in 41 States collected household toxic waste in 1987; extent of recycling collections unknown)

Baseline data source: *Environmental Progress and Challenges: EPA's Update*, EPA.

Recycling is a process involving separation of reusable material from the waste stream, collection (before or after separation), processing, marketing, and reuse of materials as the raw material for products which may or may not be similar to the original. Materials currently recovered for their value as reusable materials include used motor oil, newspapers, corrugated boxes, office papers, mixed papers, ferrous metals, glass containers, aluminum cans, plastic soft drink and milk containers, and lead-acid automobile batteries.

According to EPA, community-based programs are being put in place rapidly. At least 7 States (California, Florida, Indiana, North Carolina, South Carolina, Pennsylvania, and Wisconsin) had active glass recycling programs in 1988; 3 States (New Jersey, Rhode Island, and Connecticut) have mandatory source separation of waste, which includes newspaper. In 1988, 6 States had active recycled paper procurement programs and 12 others are considering programs.[13]

The human health benefits of recycling are indirect, with most benefits accruing through exposure prevention. For example, human exposure to pollution can be reduced through recycling of glass. The reusable form of waste glass is a crushed form called cullet. The use of cullet in glass manufacture produces 20 percent less air pollution, consumes 4 to 32 percent less energy and 50 percent less water, and generates 80 percent less mining waste.[29]

Hazardous chemicals are frequently present in small amounts in products commonly found in American households. If toxic materials are discarded with other trash, they can contribute to air and drinking water contamination, either by leaching out of landfills, or if incinerated, as toxic gas or ash. For example, phenol, a colorless or white solid, is used in household cleaners as a disinfectant. Repeated exposure to low levels of phenol in drinking water has been linked with diarrhea and mouth sores in humans; eating very large amounts has resulted in death. Effects on human health due to breathing phenol are unknown; exposure of animals to high levels of phenol in air for a few minutes is irritating to the lungs, and repeated exposure for several days causes muscle tremors and loss of coordination. Exposure to high levels of phenol for several weeks results in paralysis and severe injury to the heart, kidneys, liver, and lungs, followed by death in some cases.[4]

Special community collection of household toxic waste would help ensure that such wastes are disposed of correctly, thus reducing the risk of air and ground and surface water contamination.

11.16 Establish and monitor in at least 35 States plans to define and track sentinel environmental diseases. (Baseline: 0 States in 1990)

Note: Sentinel environmental diseases include lead poisoning, other heavy metal poisoning (e.g., cadmium, arsenic, and mercury), pesticide poisoning, carbon monoxide poisoning, heatstroke, hypothermia, acute chemical poisoning, methemoglobinemia, and respiratory diseases triggered by environmental factors (e.g., asthma).

Baseline data source: Center for Environmental Health and Injury Control, CDC.

The United States has no national surveillance system for environmental diseases although several systems provide some data. For example, the National Health and Nutrition Examination Survey has provided national data on several environmental diseases, such as lead poisoning, but these data are available only at intervals of 10 to 15 years. An effective national system that could be used to assess the health effects of exposure to environmental hazards would require at least 35 States collecting data on the following diseases: lead poisoning, other heavy metal poisoning (e.g., cadmium, arsenic, and mercury), pesticide poisoning, carbon monoxide poisoning, heatstroke, hypothermia, acute chemical poisoning, methemoglobinemia, and respiratory diseases triggered by environmental factors (e.g., asthma). Because the field of environmental health science is changing rapidly, the list of sentinel environmental diseases should be reevaluated and updated every five years.

Surveillance of sentinel environmental diseases would be useful in many ways. For example, accurate information on disease occurrence, temporal and geographic trends, and risk factors, could be used to design effective exposure and environmental disease prevention programs. Collaboration with organizations such as the Association of State and Territorial Health Officials and the Conference of State and Territorial Epidemiologists is critical to achieving data collection in at least 35 States by the year 2000. Surveillance should also be coordinated with the National Institute of Occupational Safety and Health so that overlapping issues related to occupational diseases are considered.

The surveillance of health outcomes related to hazardous substances will be expanded by CDC, ATSDR, and the States during the next decade. Two examples of surveillance systems in place for these purposes are (1) the evaluation of morbidity and mortality from unexpected releases of hazardous substances and (2) the potential adverse health effects of people having contact with hazardous substances at waste sites. Surveillance should include a broader perspective and emphasize monitoring exposure, using and developing indicators to assess exposures and health effects, and identifying measures of susceptibility to toxicants.

Personnel Needs

Priorities for ensuring trained personnel to achieve the environmental health objectives include the following:

- Expand the number of health professionals available to accomplish the practice, educational, and research aspects of the environmental health objectives.

A recent study by the Bureau of Health Professions, Health Resources and Services Administration, determined that in 1987, 121,000 additional environmental health specialists (environmental scientists, geologists, chemists, biologists, toxicologists, epidemiologists, hydrogeologists, and engineers) were needed. In addition to the need for environmental health specialists, HRSA documented that 40,000, or 17 percent of the current work force of 250,000, is inadequately trained.[19]

Currently, there are only 1,500 environmental health graduates nationwide each year. As a result, government agencies are filling positions with inappropriately educated personnel. Unfortunately, these same government agencies often carry the important role of regulating environmental quality and protecting human health by conducting technically complex programs mandated by Federal laws and regulations. To meet the estimated need for environmental health professionals, governments, industry, and academia should work together to create additional academic programs and strong accreditation processes for new and existing programs.

- Provide continuing education on treatment, control, and identification of environmental health hazards through national professional associations whose members have roles in the delivery of related services.

Increasing the number of specialists in environmental health should be undertaken in conjunction with training in environmental health for physicians, generalists in medicine and engineering, and public school teachers. In addition, development and dissemination of toxicological and clinical information to practicing medical practitioners is needed through mechanisms such as the Case Studies in Environmental Medicine developed by ATSDR.

Surveillance and Data Needs

Availability of Future Data

Annual data from exiting surveys, surveillance systems, and vital records are available to track Objectives 11.1, 11.3, 11.5, 11.7, and 11.14.

Periodic surveys and/or supplements to existing surveys can help track Objectives 11.4, 11.6, 11.8, 11.9, 11.10, 11.11, and 11.16.

New surveillance systems are needed to track Objectives 11.2, 11.12, 11.13, and 11.15.

High Priority Needs

- Improved surveillance methods for evaluating the efficacy of environmental hazard regulation.

At the Federal level, most environmental legislation does not require collection of the data needed to evaluate the health effects of environmental controls. However, such data can be invaluable. For example, National Health and Nutrition Examination Survey (NHANES) II provided national estimates of blood lead levels from 1976 to 1980. These data showed the dramatic effect of removing lead from gasoline on blood lead levels.

Most Federal environmental standards and regulations are developed by regulatory agencies, such as EPA, often with heavy reliance on health data generated by such agencies as PHS. But are actions taken by environmental regulatory agencies in fact improving health? For example, have pesticide regulations decreased exposure of the public to carcinogenic pesticides?

The development and operation of disease surveillance systems, measurement of national health, and operation of other public health data systems are appropriate PHS functions. Assessing the public health impact of environmental legislation, standards, and regulations is also an important public health responsibility. Evaluation data are needed for:

- Levels of pesticides in food and ground water.
- Asthma/respiratory disease and failure to attain air quality standards.
- Levels of toxic contaminants consumed in drinking water.

- Emergency contingency planning and the prevention of mortality and morbidity due to release environmental release of hazardous material.
- Cleanup of hazardous waste sites.
- Benefits of public health involvement in land use planning.
- The biological indications of hazardous substance exposure and health effects of those individuals enrolled in exposure and disease registries.

Research Needs

Although objectives for basic and applied biomedical research in the environmental health sciences are not included in the year 2000 objectives, such studies should be given high priority. PHS is committed to supporting a sustained program of basic and applied toxicological, biomedical, and epidemiological research in environmental health.

- There is an urgent need for reliable information on the health effects of environmental contaminants. The National Academy of Sciences reported in 1984 that 82 percent of major industrial chemicals have not been tested for their toxic properties.

Scientific data are a critical part of the base for risk management decisions, for cost-effectiveness and cost-benefit analyses of various regulatory actions, and for use by health agencies and medical care providers in response to human exposure. Too little is known about the mechanisms by which chemical and physical agents harm human health. Methods to detect human exposure to many chemicals have not been developed. Distribution and detection of subtle effects of environmental chemicals in human organs are essentially unknown.

Laboratory-based toxicologic studies and basic biomedical research provide the foundation for effective environmental health programs. However, better models to extrapolate findings from laboratory studies to humans are needed. Research should be linked to sensitive new environmental monitoring and disease surveillance systems to help guide progress toward meeting the environmental health objectives for the year 2000.

Public perceptions of risk from exposure to hazardous materials do not compare well to scientific estimates of risk. Additional research is needed into how the public forms opinions of risk and how these opinions change in response to new information.

- Nationwide efforts to delineate the extent and possible human health effects of atmospheric warming and ozone depletion are needed.

Current research suggests an atmospheric warming trend over the past century, that if continued, could have severe public health effects. For example, total daily mortality rates in some United States cities increase 30 to 50 percent during prolonged heat waves.[21] Data have evolved over the past century, and the conclusion that the earth is warming is not universally shared, but the weight of scientific opinion favors this conclusion. Although it is impossible to predict or quantify the exact impact of global warming trends accurately, quick response requires that programs be put in place to monitor early changes and assess potential risks.

Depletion of stratospheric ozone also presents potentially significant health risks. The ozone layer, a thin blanket of gas about six miles above the earth's surface, filters out a portion of the sun's ultraviolet radiation. The ozone layer has been affected by release of chlorofluorocarbons (CFCs) into the atmosphere. In the lower atmosphere, CFCs trap heat, but higher up in the atmosphere these compounds destroy ozone. At the South Pole, up to 50 percent of the ozone is destroyed each spring over an area the size of the United

States. Similar, but less severe losses occur over the Arctic. Were greater levels of ultraviolet rays to reach the earth's surface, the incidence of skin cancer and cataracts would be expected to increase.

Several agencies, including EPA, the Department of Energy, the National Oceanic and Atmospheric Administration, and the National Aeronautics and Space Administration have already allocated substantial resources to the problem of global climate change. However, atmospheric warming and ozone depletion trends will not be reversed overnight. Implementation of measures to counteract these trends will require extensive coordination among numerous nations as well as health and environmental agencies within the United States. A fuller understanding of the potentially enormous impact of global warming and ozone depletion on human health will require much further research, including a substantial contribution from the public health system.

- More information is needed on prevalent and potentially harmful environmental conditions including excessive noise and low-level ionizing radiation.

Over 21 million Americans suffer hearing impairment. In 1988, 90.8 per 1,000 people had hearing impairments and 7.5 per 1,000 were deaf in both ears.[23] There are approximately 28 million people in the United States with impaired hearing. Approximately 10 million of these cases are associated with loud noise. For many of these individuals, exposure to occupational and recreational noise has caused irreversible damage to the inner ear. However, it is unclear whether the incidence of hearing impairment has risen in recent years, because few studies of noise induced hearing loss have been conducted. Additional research on the prevalence and severity of environmental noise pollution is needed so that appropriate public health protections can be implemented.

Exposure to large doses of ionizing radiation is known to increase the incidence of many types of cancer, but dose-incidence relationships have not been well defined. As a result, cancer risk associated with low-level radiation can only be estimated through uncertain extrapolations from higher dose data. Several studies suggest that there may be no safe threshold for exposure to ionizing radiation. This possibility has prompted repeated attempts to measure the effect of low-level radiation among populations living in areas of high background radiation, populations exposed occupationally to low-level radiation, and populations receiving small doses from other natural and man-made sources. Such studies have not conclusively demonstrated carcinogenic effects.[28] However, this may be due to methodological limitations. Further research is needed to clarify the relationship between low-level radiation and cancer.

Related Objectives From Other Priority Areas

Tobacco

3.8 Children's exposure to smoke at home
3.10 Tobacco-use prevention education and tobacco-free schools
3.11 Worksite smoking policies
3.12 Clean indoor air laws

Educational and Community-Based Programs

8.6 Worksite health promotion activities
8.10 Community health promotion programs

Occupational Safety and Health

10.4 Occupational skin disorders
10.7 Occupational noise exposure
10.11 Occupational lung diseases
10.12 Worksite health and safety programs
10.14 State programs for small business safety and health
10.15 Clinician assessment of occupational health exposures

Maternal and Infant Health

14.5 Low birth weight
14.12 Age-appropriate preconception counseling by clinicians
14.13 Counseling on detection of fetal abnormalities

Cancer

16.1 Cancer deaths
16.2 Lung cancer
16.9 Actions to reduce sun exposure

Diabetes and Chronic Disabling Conditions

17.4 Activity limitation due to asthma

17.6 Hearing impairment

Surveillance and Data Systems

22.4 Gaps in health data

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Food and Drug Safety

12

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12.1 Foodborne infections

12.2 Salmonella outbreaks

12.3 Refrigeration and cutting board practices

12.4 Food protection standards

12.5 Linked pharmacy systems

12.6 Medication review for older patients

12. Food and Drug Safety

Introduction

A major public health accomplishment during the 20th Century has been the development of Federal and State systems to provide nearly universal protection of consumers from dangers posed by unapproved food additives, unapproved uses of pesticides, food contaminants, and use of unapproved drugs. From Food and Drug Administration (FDA) and U.S. Department of Agriculture inspections of meat, poultry, dairy products, and processed foods to State and local public health regulation of restaurants and retail food sales, an unprecedented level of safety and assurance has been achieved for American consumers. For example, inspections of foods to test for pesticide residues consistently find between 96 and 98 percent of tested foods from both domestic and international sources to be within legally established levels (tolerances) and to contain no pesticides not permitted for use on the food. Tolerance levels are normally set conservatively at between 100 and 1,000 times lower than the level causing no effect in test animals.[2]

Similarly, procedures to ensure that new drugs developed and marketed by pharmaceutical companies are safe and effective are well established, as are regulations that provide for quick intervention in cases of adverse reactions to approved drugs. In a single year, for example, FDA officials inspect nearly one-third of the 18,000 drug and biologics establishments in the United States to ensure that medicines are being produced and handled appropriately. They sample nearly 7,000 domestically produced medicines to ensure that manufacturing and product standards are being met. Where necessary they use legal authority to seize products, initiate court injunctions, and engage in prosecutions against producers of unsafe drugs. In addition, they have legal authority to initiate product recalls.[6]

To monitor food and drug safety, regulatory agencies use modern technology and systematically conduct research themselves. Communication is an additional necessary element of the system. Communication may be targeted at industry, professional groups, or consumers. Consumer-oriented educational strategies are carefully structured and orchestrated to foster safety by providing information to consumers to fulfill their roles in preventing injury or illness.

Despite what many observers believe to be the most effective food and drug safety regulations in the world, this country still experiences outbreaks of foodborne diseases and incidents of drugs causing illness and even death rather than the desired therapeutic effects. In some instances, these outcomes result from failures in the protective systems at the Federal, State, or local levels. In many other instances, unintended outcomes result from improper handling of foods by consumers rather than producers, inadequate compliance by patients with prescribed drug therapies, and problems associated with polypharmacy or different health care providers prescribing drugs for the same patient resulting in interactions that produce adverse reactions. In short, food and drug safety is principally a matter of protective systems, but it also requires well-informed consumers.

This priority area focuses on maintaining and improving a part of the public health system in the United States that has already proved its effectiveness but requires continuing vigilance and support during the coming decade.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

12.1 Reduce infections caused by key foodborne pathogens to incidences of no more than:

Disease (per 100,000)	*1987 Baseline*	*2000 Target*
Salmonella species	18	16
Campylobacter jejuni	50	25
Escherichia coli 0157:H7	8	4
Listeria monocytogenes	0.7	0.5

Baseline data source: Center for Infectious Diseases, CDC.

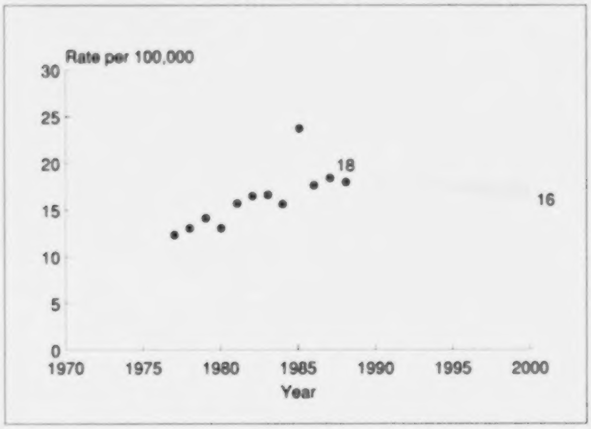

Fig. 12.1

Salmonella incidence rate

Salmonella enteritidis, *Campylobacter jejuni*, *Escherichia coli* 0157:H7, and *Listeria monocytogenes* are four of the most important foodborne pathogens in the United States, based on the number of reported cases that occur and their severity. Because infections by *Salmonella* and *E. coli* 0157:H7 are actually increasing in incidence, decreasing their occurrence will be difficult. The growing proportion of our population that is compromised by immunologic deficiencies and age exacerbates the problem, because these subpopulations are more susceptible to infection and to dying as a result of infection.

Educational materials to increase consumer awareness of methods to prevent foodborne diseases have been developed and distributed by public and private organizations at the national, State, and local levels. However, investigations of foodborne diseases have repeatedly shown that many consumers do not understand the hazards or do not take precautions to reduce their risks. Lack of effective consumer education is one reason for the concern about contamination of raw foods. Farm management strategies to reduce rates of colonization of farm animals by these four human pathogens should also be explored, including control of feed and water supplies as well as environmental controls. Sanitary shipping, slaughter, and processing operations are also vital to reducing cross-contamination.

Reduction in sporadic listeriosis cases will require altering food preparation habits through public information campaigns for foods associated with this disease. Indicators of microbial growth and/or time and temperature abuse should be used to alert food handlers at each stage of food processing when the product has been handled incorrectly. Such indicators would also increase the awareness of food handlers and the public at large about the importance of preventing time and temperature abuse. Methods that reduce the incidence of these four key pathogens may also reduce foodborne illnesses caused by certain other bacterial, viral, and parasitic pathogens.

This objective assumes that, during the coming decade, investigators in public and private sectors will be able to learn more about the natural reservoirs of these bacteria and their dissemination during food processing and will implement improvements in industry and regulatory agencies' detection of potential sources of contamination. In addition, existing surveillance efforts need to be strengthened to measure the clinical and economic impact of foodborne diseases and to monitor efforts to reduce the incidence of foodborne diseases.

12.2 Reduce outbreaks of infections due to *Salmonella enteritidis* to fewer than 25 outbreaks yearly. (Baseline: 77 outbreaks in 1989)

Baseline data source: Center for Infectious Diseases, CDC.

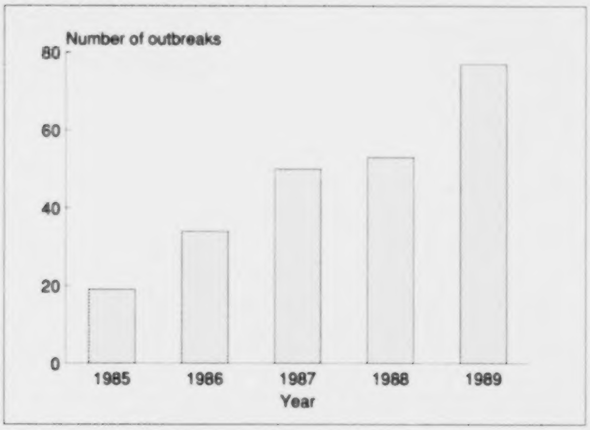

Fig. 12.2

Salmonella outbreaks per year

Outbreaks of *Salmonella enteritidis* infections increased dramatically over the decade of the 1980s, especially in the New England and mid-Atlantic States. This foodborne disease is often traced to contaminated eggs. It produces severe diarrhea, fever, vomiting, and cramps and can cause death. The 77 outbreaks reported in 1989 involved 2,394 cases and 14 deaths. This disease can be particularly dangerous for infants, older adults, and immunocompromised people. With the projected increase in the number of older people and people with AIDS, death and illness caused by Salmonella infections are expected to continue to increase.

Thorough cooking kills Salmonella, but heavily contaminated eggs used in some standard cooking methods (as in preparation of sauces, meringue, scrambled or soft-boiled eggs) may still not be safe. Risk increases significantly if raw or undercooked eggs are left at room temperature more than 2 hours. Outbreaks of salmonellosis often result from eating contaminated foods at picnics and parties for which food was prepared privately, rather than commercially. For this reason, public education about proper food preparation is crucial to efforts to reduce the number of outbreaks as well as individual cases. The U.S. Department of Agriculture provides information on safe cooking and handling of eggs, as well as other potentially hazardous foods, through both a central hotline and county extension home economists.

Risk Reduction Objective

12.3 Increase to at least 75 percent the proportion of households in which principal food preparers routinely refrain from leaving perishable food out of the refrigerator for over 2 hours and wash cutting boards and utensils with soap after contact with raw meat and poultry. (Baseline: For refrigeration of perishable foods, 70 percent; for washing cutting boards with soap, 66 percent; and for washing utensils with soap, 55 percent, in 1988)

Baseline data source: Food Safety Survey, FDA; Diet-Health Knowledge Survey, USDA.

Government inspection and strict standards within the food industry assist in the job of keeping the American food supply safe and wholesome. The law requires that inspectors check and recheck the safety and quality of meat and poultry from the time the animals arrive at the packing plant until the final product is ready for sale. The individual consumer also plays an important role in keeping food safe. Preventing food poisoning must begin when food is purchased at the supermarket and must continue through storing, preparing, cooking, and serving the food at home. The U.S. Department of Agriculture has developed 7 commandments of food safety:

1. Wash hands before handling food.
2. Keep it safe, refrigerate.
3. Don't thaw food on the kitchen counter.
4. Wash hands, utensils and surfaces again after contact with raw meat and poultry.
5. Never leave perishable food out over 2 hours.
6. Thoroughly cook raw meat, poultry, and fish.
7. Freeze or refrigerate leftovers promptly.

Services and Protection Objectives

12.4 Extend to at least 70 percent the proportion of States and territories that have implemented model food codes for institutional food operations and to at least 70 percent the proportion that have adopted the new uniform food protection code ("Unicode") that sets recommended standards for regulation of all food operations. (Baseline: For institutional food operations currently using FDA's recommended model codes, 20 percent; for the new Unicode to be released in 1991, 0 percent, in 1990)

Baseline data source: Center for Food Safety and Applied Nutrition, FDA.

A primary concern of this objective is to extend protective standards and regular monitoring to food services that may tend to be missed. Such food services include health care facilities, congregate feeding programs for older adults, day care and Head Start programs, meal programs for the homeless, and other food services that are not usually covered by programs on retail or commercial enterprises.

Health and sanitation inspections directed to restaurants, cafeterias, congregate feeding programs, and food stores are a basic part of the public health protection system in this country. They are authorized by codes adopted at the State level. In all, 56 States and territories and the District of Columbia have authority to set standards and monitor adherence on the part of food service providers. In the past, separate codes have generally been promulgated for restaurants and cafeteria operations and for food stores principally marketing packaged foods and fresh produce.[1,4,5] The variety of possible settings for food services that involve food handling and preparation for immediate consumption and the expansion of food preparation services in settings that previously offered only packaged foods and fresh produce have blurred the distinctions between the separate inspection code systems. From the perspective of protecting the health of the public, the requirements for ensuring safe food are not essentially different, regardless of the nature of the retailer or food service. Neither does it appear appropriate to hold one type of food service provider to a set of standards that are more or less demanding than those applied to another provider of the same kind of food. The new FDA Unicode scheduled for publication in 1991 will hold all food operations to the same standard.

12.5 Increase to at least 75 percent the proportion of pharmacies and other dispensers of prescription medications that use linked systems to provide alerts to potential adverse drug reactions among medications dispensed by different sources to individual patients. (Baseline data available in 1993)

Medical treatment today frequently involves the use of multiple concurrent medications, including both prescription and over-the-counter drugs. Medications, while beneficial, can also cause adverse drug reactions, and patients taking several medications simultaneously are at higher risk of suffering these effects. Since many patients see more than one primary care provider, there is an ever-increasing possibility that they may be concurrently taking several drugs from the same class of therapeutic agents, prescribed independently by different primary providers. This can result in needless suffering or loss of therapeutic benefit in specific clinical conditions.

Information services provided by pharmacists and medical clinics that dispense prescription medications can improve patient outcomes and reduce costs of care. Computerized technology is increasingly being used by pharmacists to detect, resolve, and prevent drug-related problems that can lead to suffering and death. An estimated 85 percent of all pharmacies in this country now use computers to some degree in their operations.[9]

The first line of defense the pharmacist can employ against adverse drug reactions is a computerized review of new prescriptions for potential interactions. At the most basic level, the review may screen for missing or improper dosage information. On a more sophisticated level, the review may include whatever information the pharmacist has collected on the patient's drug history. An automated review uses computer software that can be programmed to screen for therapeutic duplication in a patient's drug regimen. More sophisticated computer software allows screening for a wide range of drug interactions, including drug-drug, drug-allergy, and drug-disease interactions.

As patients obtain prescriptions from multiple community pharmacies, hospital pharmacies, mail order pharmacies, and directly from physicians, information systems to link prescription records are essential. Many possible mechanisms permit such linkage. For example, "smart" credit card systems can enable patients to carry their own prescription medicine records and share those records with pharmacists and physicians. Alternatively, centralized data bases can be used to share records among authorized users. Developing and testing such systems will assure patients access to multiple medication distribution mechanisms while at the same time permitting health professionals with the necessary equipment to review the patient's prescription history and screen for preventable adverse drug interactions.

Consumers may not be aware that pharmacists are highly knowledgeable sources of information about appropriate drug administration, interactions, and potential side effects. In a 1984 survey of 300 elderly patients only 1 in 6 patients mentioned the pharmacist as someone they would ask about prescription drugs.[12] There is some evidence, however, that patient demand for more and better information about drug therapy is increasing.[8] Augmenting this overall heightened interest in health care, consumer groups and nonprofit organizations such as the National Council on Patient Information and Education (NCPIE) have conducted public education campaigns to alert consumers to drug-related risks and to encourage them to seek more and better information from health professionals.

For this objective to be fully realized, consumers must be informed about the value of computerized pharmacies and they must be willing to provide the pharmacist with the specific information needed for the drug safety information system. The Food and Drug Administration will collaborate with private professional associations to develop baseline data and to track this objective.

12.6 Increase to at least 75 percent the proportion of primary care providers who routinely review with their patients aged 65 and older all prescribed and over-the-counter medicines taken by their patients each time a new medication is prescribed. (Baseline data available in 1992)

Older adults, who have higher rates of chronic disease and use more health services than the total population, also take more prescription and nonprescription medicines than younger people. Adults aged 65 and older comprise approximately 12 percent of the population but receive 30 percent of all prescription medications.[10] As their proportion of the population rises in the coming decade, it is expected that the proportion of prescription medications used will rise also. About 95 percent of older adults live outside of institutions and are responsible for their own medications.[7] According to one study 25 percent of older patients discharged from hospitals were using 6 or more prescription medications.[11]

One of the major problems associated with polypharmacy use—the use of multiple medications—is adverse drug reactions. Patients who use multiple physicians and pharmacies run the risk of receiving drugs that are therapeutic duplicates and drugs that interact, since the health care professional they see may not be fully informed about other prescriptions. In addition, the more prescriptions an individual is given, the greater the risk of medication errors and noncompliance. A 1986 report indicated that those over age 60 accounted for one-third of all hospitalizations for adverse drug reactions.[3]

Although all medications have some side effects, the physiologic changes associated with increasing age and particular diseases and conditions may alter the effects of drugs. Adverse drug reactions are more likely to cause significant illness and/or death among older adults compared to younger people. Other problems associated with geriatric drug therapy include compliance, costs, access, and attitudes. Health promotion interventions targeted to these problems need to take into account the interdependency of these issues. Patients need to be better informed about the medications they are taking and encouraged to ask questions when given a new prescription. Physicians and other primary health care providers need to closely monitor the multitude of drugs being prescribed for their patients.

The Office of Disease Prevention and Health Promotion will initiate a survey of primary health care providers that will provide baseline data and track this objective beginning in 1992.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the food and drug safety objectives include the following:

- Establish the number of food and drug inspection professionals who are needed to accomplish the regulatory and monitoring aspects of food and drug safety requirements; establish the appropriate levels of auxiliary professionals in research and communication aspects of these objectives; establish an adequate epidemiologic work force to identify foodborne hazards, quantify risks, and increase the efficacy of intervention strategies; and establish appropriate levels of training for inspection personnel, managers of food preparation operations, and others with roles in assuring food and drug safety.
- Provide information on food and drug safety to schools and programs preparing students for careers in public health, agriculture, pharmacy, medicine, nursing, dietetics, restaurant and hotel management, and related occupations.
- Increase the provision of continuing education on food and drug safety by national professional associations whose members have roles in ensuring food and drug safety.

Surveillance Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 12.1, 12.2, and 12.4.

Periodic surveys and/or supplements to existing surveys can help to track Objective 12.3.

New surveillance systems are needed to track Objectives 12.5 and 12.6.

High Priority Needs

- Continue to develop postmarketing surveillance programs to assess the occurrence of adverse drug reactions in all populations with special attention being given to the elderly.
- Improve surveillance of adverse drug reactions and track adverse drug reactions related to products recently switched from prescription to over-the-counter status.
- Create a system to investigate epidemiologic and laboratory characteristics of foodborne pathogens and evaluate the effectiveness of educational and control methods. Although current foodborne disease surveillance efforts have been adequate to effectively identify many foodborne hazards, data are currently inadequate to quantify risk associated with specific vehicles or specific pathogens. Accurate projections can be obtained, however, from sentinel surveillance systems such as that now being used to study the incidence of listeriosis. Sentinel surveillance systems of this type should be expanded to cover all major foodborne pathogens and be combined with case control studies to determine food vehicles and, with pathogen surveillance of foods, to estimate the population's risk of exposure.

Research Needs

A research priority of food and drug safety is pharmacoepidemiologic studies using linked data bases for finite populations. Data for special populations could be collected from Medicaid, HMOs, outpatient clinics, and Veterans hospitals and clinics. Research is also needed to determine the following:

- The nature and prevalence of consumer attitudes toward chemical contaminants, microbiologic contaminants, and other food safety issues in order to develop appropriate strategies for assisting consumers in understanding the true impact of each of these on public health.
- The ecology of foodborne pathogens from farm to table, the effects of various agricultural practices, and processes that can decrease or eliminate pathogens from food without affecting food quality. Rapid, sensitive, and reliable methods are needed to detect specific microorganisms and to discriminate nonpathogenic from pathogenic strains. Epidemiologic studies should identify high risk foods, processes, and behaviors, and define those subpopulations at greatest risk of infection and serious outcomes. These studies should also determine how pathogens enter the home and other food preparation settings, how they spread within the kitchen environment, and how they contaminate foods ready for consumption and ultimately infect humans.

Related Objectives From Other Priority Areas

Alcohol and Other Drugs
4.4 Drug abuse-related emergency room visits
4.11 Anabolic steroid use

Educational and Community-Based Programs
8.7 Health promotion activities for hourly workers
8.11 Programs for racial/ethnic minority groups

Unintentional Injuries
9.8 Nonfatal poisoning
9.21 Injury prevention counseling by clinicians

Occupational Safety and Health
10.12 Worksite health and safety programs

Environmental Health
11.7 Toxic agent releases

Clinical Preventive Services
21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems
22.3 Comparable data collection procedures

Baseline Data Source References

Center for Infectious Diseases, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Food and Drug Administration, Public Health Service, U.S. Department of Health and Human Services, Washington, DC.

Food Safety Survey, Food and Drug Administration, Public Health Service, U.S. Department of Health and Human Services, Washington, DC.

Health Knowledge Survey, Human Nutrition Information Service, U.S. Department of Agriculture, Beltsville, MD.

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[3] Food and Drug Administration. Adverse Drug Reaction Reporting System Database, Rockville, MD, 1989.

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[9] National Association of Retail Druggists. NARD's 1989 membership survey. *NARD Journal* No. 20, October, 1989.

[10] Office of Technology Assessment, Health Program. "Prescription drugs and elderly Americans: Ambulatory use and approaches to Medicare." Staff paper, October, 1987.

[11] Smith, C.R. Use of drugs in the aged. *Johns Hopkins Medical Journal* 145(2):62-64, 1979.

[12] Smith, M.; et al. A study of pharmacists' involvement in drug use by the elderly. *Drug Intelligence and Clinical Pharmacy* 18:525-29, 1984.

Oral Health

13

Contents

13.1 Dental caries
13.2 Untreated dental caries
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13.4 Complete tooth loss
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13.14 Regular dental visits
13.15 Oral health care for infants with cleft lip and/or palate
13.16 Protective equipment in sporting and recreation events

13. Oral Health

Introduction

Oral diseases are among the most prevalent health problems in the United States. Although oral health status has been improving, especially in children, expenditures for dental care totaled more than $27 billion in 1988.[20] In 1986, dental-related illnesses accounted for 6.4 million days of bed disability, 14.3 million days of restricted activity, and 20.9 million lost work days.[19]

Even these numbers, however, may not fully reflect the chronic burden that oral diseases place on our population. The prevalence of dental caries among children has declined steadily since the 1940s, so that only half of school age children have any decay in their permanent teeth.[16] However, among people aged 18 and 19, an average of 12 tooth surfaces have decayed. Among people aged 40 through 44, more than 30 tooth surfaces have been affected by decay.[16]

Periodontal diseases are also a chronic problem. For example, 40 to 50 percent of adults[16] and 60 percent of adolescents aged 15 experience gingival infections.[15] Fortunately, more serious periodontal infections are less prevalent. Still, 24 percent of employed adults have lost at least 4 millimeters of periodontal attachment,[16] and one in five adolescents has lost at least 2 millimeters of attachment on at least one tooth.[15] Despite a steady decline in tooth loss over the past several decades, 36 percent of people aged 65 and older have lost all of their natural teeth.[14] The lack of a healthy, functioning dentition can contribute to existing medical conditions and create psychosocial problems.

Several factors could enhance oral health: improved self-care, including brushing, flossing, and appropriate use of fluorides; receipt of regular oral health services; good eating habits, e.g., limiting consumption of caries-promoting foods; tobacco use cessation; and reduction in alcohol use.

Fluoride has long been recognized as the most reliable preventive measure for caries control. More than 100 million people in the United States are not served by fluoridated water supplies adjusted to optimal levels and antifluoridation activities and insufficient resources inhibit the extension of optimal fluoridation into many communities. For people in these communities, supplemental fluorides—both systemic and topical—should be used. Adhesive dental sealants hold great potential for further significant reductions in dental decay.[11]

Use of oral health services has increased only modestly in recent years with 57 percent of people visiting a dentist during a 12-mouth period. [13] Among toothless people and people with low incomes, dental care is obtained even less frequently. Dental visits provide not only access to routine diagnosis and treatment, but also exposure to education and prevention measures. About 100 million people—less than half the population—have dental insurance,[6] and that number is not expected to grow substantially in the near future. For people who continue to encounter barriers to care, targeted community-based programs could improve access and reduce disease and tooth loss. In particular, many institutionalized people fail to receive periodic routine care.

In developing the targets for national oral health in the year 2000, a number of assumptions were made. Oral disease prevention technologies are not expected to undergo major changes in the next decade. Although there may be new products such as fluoride-releasing sealants, antibacterial rinses, plaque and tartar control dentifrices, slow-release intraoral drug delivery techniques, and advanced microbiologic diagnostic tests, much of what can be accomplished still will depend on conscientious personal oral health care supplemented with regular professional care. A principal strategy should be to expand use of the most effective and efficient preventive methods, which implies that community water fluoridation be given the highest consideration in communities concerned with reducing oral diseases among their residents.

A factor yet to be quantified is the unique oral disease prevention and treatment needs of people with human immunodeficiency virus (HIV). Because they are susceptible to a range of oral infections and neoplasms that differ from the general population, their care will be a growing challenge to the oral health care system.

Over the years, oral health promotion and disease prevention programs have been targeted mainly to children. As the population ages and retention of natural teeth increases, a higher level of interest in and a greater commitment on the part of people of all ages to oral health can be anticipated. In the years ahead, the challenge to the public and private sectors will be to meet the needs of the aging adult population while not excluding children from proven disease prevention technologies.

The year 2000 oral health objectives are not based solely on straight line projections from recent trends in the prevalence and incidence of oral diseases. Rather, targets are based on estimates by expert panels of what can be achieved given: (1) trends in the determinants of oral diseases (e.g., community water fluoridation, public awareness); (2) resources available to control disease; (3) anticipated technological advances that may help improve primary and secondary prevention; and (4) shifts in Federal, State, and local priorities.

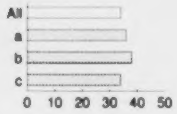
Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

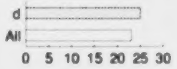
Health Status Objectives

13.1 Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 60 percent among adolescents aged 15. (Baseline: 53 percent of children aged 6 through 8 in 1986-87; 78 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Dental Caries Prevalence	*1986-87 Baseline*	*2000 Target*	*Percent Decrease*
13.1a	**Children aged 6-8 whose parents have less than high school education**	70%	45%	
13.1b	**American Indian/Alaska Native children aged 6-8**	92%[†] 52%[‡]	45%	
13.1c	**Black children aged 6-8**	61%	40%	
13.1d	**American Indian/Alaska Native adolescents aged 15**	93%[‡]	70%	





[†] *In primary teeth in 1983-84*

[‡] *In permanent teeth in 1983-84*

Baseline data sources: *Oral Health in United States Children*, NIH; for children whose parents have less than a high school education, North Carolina Oral Health School Survey; Indian Health Service.

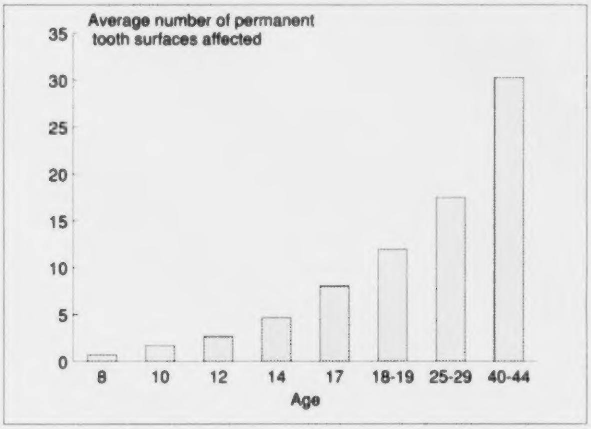


Fig. 13.1

Cumulative caries experience

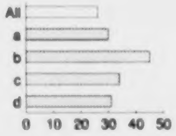
Dental caries is perhaps the most prevalent disease known. Except in its early stages, it is irreversible and cumulative. Children aged 6 through 8 are at an important stage of dental development; they have a complement of primary teeth as well as their permanent first molars and incisors. The importance of optimal oral health for these children cannot be overemphasized; it is critical not only to their current oral functioning, but also for long-term health. Separate targets are set for adolescents because the prevalence of dental caries is so much higher among adolescents than young children. Moreover, an objective targeted at teenagers will better reflect the cumulative caries experience of children during the 1990s.

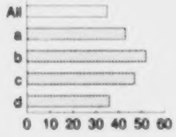
Community water fluoridation and use of preventive services, such as sealants and topical fluoride treatments, along with appropriate oral health behaviors, decrease the chances that children and adolescents will develop caries. Many young children, particularly those in high-risk groups, do not receive adequate fluoride exposure or adhesive sealants, regular professional care, or oral hygiene instruction. Unfortunately, many physicians do not conduct even a rudimentary examination of young patients' mouths or provide children or their parents with oral health counseling or referral for care.[21] For children from low-income families, a significant hurdle is paying for services.

13.2 Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6 through 8 and no more than 15 percent among adolescents aged 15. (Baseline: 27 percent of children aged 6 through 8 in 1986; 23 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Untreated Dental Caries:	*1986-87 Baseline*	*2000 Target*	*Percent Decrease*
	Among Children—			
13.2a	**Children aged 6-8 whose parents have less than high school education**	43%	30%	
13.2b	**American Indian/Alaska Native children aged 6-8**	64%†	35%	
13.2c	**Black children aged 6-8**	38%	25%	
13.2d	**Hispanic children aged 6-8**	36%‡	25%	
	Among Adolescents—			
13.2a	**Adolescents aged 15 whose parents have less than a high school education**	41%	25%	
13.2b	**American Indian/Alaska Native adolescents aged 15**	84%†	40%	
13.2c	**Black adolescents aged 15**	38%	20%	
13.2d	**Hispanic adolescents aged 15**	31-47%‡	25%	





†1983-84 baseline

‡1982-84 baseline

Baseline data sources: *Oral Health in United States Children*, NIH; Indian Health Service; Hispanic Health and Nutrition Examination Survey (Hispanic HANES), CDC; for children and adolescents whose parents have less than a high school education, North Carolina Oral Health School Survey.

Early diagnosis and timely treatment of caries can halt tooth destruction and prevent tooth loss. Yet in 1986-87 the proportions of children aged 6, 7, and 8 with untreated decay in primary teeth were 32, 27, and 25 percent, respectively; in permanent teeth 39, 32, and 24 percent of children had decay that had not been treated.[15]

Surveys have shown that, because of inadequate receipt of routine dental care, certain populations experience higher rates of untreated caries. For example, the prevalence of untreated decay may be higher among the children of migrant workers than the total population; migrant workers' use of dental services is well below the national average.[23]

Dental caries is a unique microbial infection. Once established, it is progressive, does not heal without treatment, and leaves visible evidence of past infection. Because early diagnosis and prompt treatment of caries can halt tooth destruction and prevent tooth loss, low prevalence of untreated caries should be attainable. Financial, cultural, psychological, social, and geographic barriers contribute to lack of treatment.

13.3 Increase to at least 45 percent the proportion of people aged 35 through 44 who have never lost a permanent tooth due to dental caries or periodontal diseases. (Baseline: 31 percent of employed adults had never lost a permanent tooth for any reason in 1985-86)

Note: Never lost a permanent tooth is having 28 natural teeth exclusive of third molars.

Baseline data source: *Oral Health of United States Adults*, NIH.

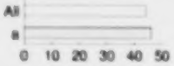
A dramatic increase in tooth loss occurs among people aged 35 through 44.[12] Loss of natural teeth often requires sophisticated and costly rehabilitative care and affects eating, speaking, and dental arch stability. This objective affirms a basic societal commitment to preserving natural teeth and highlights the need for organized dentistry, government, and other public and private institutions to reassess policies that accept or promote routine extraction.

Widespread exposure to fluorides and improved personal oral care habits combined have reduced the prevalence of the two leading causes of tooth loss: dental caries and periodontal diseases. Tooth loss also occurs as a result of trauma, oral cancer treatment, and certain orthodontic and prosthetic services.

Despite a general reduction in tooth loss, one-quarter of American Indians and Alaska Natives aged 35 through 44 have fewer than 20 natural teeth; among those aged 55 and older, nearly three-fourths have fewer than 20 teeth.[7] Overall, among adults in other racial and ethnic groups, the rate of tooth loss does not differ significantly from the national average.

13.4 Reduce to no more than 20 percent the proportion of people aged 65 and older who have lost all of their natural teeth. (Baseline: 36 percent in 1986)

Special Population Target

	Complete Tooth Loss Prevalence	*1986 Baseline*	*2000 Target*	*Percent Decrease*
13.4a	**Low-income people (annual family income <$15,000)**	**46%**	**25%**	

Baseline data source: National Health Interview Survey, CDC.

Among older people, loss of natural teeth can complicate systemic health problems and contribute to psychological, social, and physical handicaps. Even when missing teeth are replaced with well-constructed dentures, there may be limitations in speech, chewing ability, and quality of life. Most tooth loss is the result of untreated dental caries and/or periodontal diseases. Therefore, the level of edentulism (complete tooth loss) reflects not only the prevalence of caries and periodontal diseases, but also the availability and use of appropriate professional services and community preventive services. Tooth loss can be prevented through education, regular dental care, and early diagnosis and prompt treatment of diseases and conditions that lead to tooth loss. Children and adults (and the health care professionals who serve them) must recognize the signs and symptoms of oral diseases and know the oral health care practices necessary to prevent them.

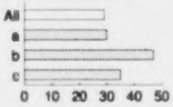
Despite a steady decline in the rate of complete tooth loss over the past several decades, in 1986, 30 percent of people aged 65 through 74 had lost all of their natural teeth; among all people aged 65 and older, 36 percent had lost all of their natural teeth.[13] The rate of complete tooth loss among blacks and Hispanics aged 65 through 74 is close to the national average, although low-income adults aged 65 and older experience a higher rate (46 percent in 1986).[8]

13.5 Reduce the prevalence of gingivitis among people aged 35 through 44 to no more than 30 percent. (Baseline: 42 percent in 1985-86)

Special Population Targets

	Gingivitis Prevalence	*1985 Baseline*	*2000 Target*
13.5a	**Low-income people (annual family income <$12,500)**	**50%**	**35%**
13.5b	**American Indians/Alaska Natives**	**95%†**	**50%**
13.5c	**Hispanics**		**50%**
	Mexican Americans	74%‡	
	Cubans	79%‡	
	Puerto Ricans	82%‡	

Percent Decrease



†*1983-84 baseline*

‡*1982-84 baseline*

Baseline data sources: *Oral Health of United States Adults*, NIH; Indian Health Service; Hispanic Health and Nutrition Examination Survey (Hispanic HANES), CDC.

Among adults, a leading cause of tooth loss and illness are periodontal diseases; more than 50 percent of adults suffer from them in some form.[16] The most preventable form of the diseases—gingivitis—is characterized by localized infection, swelling, and bleeding gum tissue.

Most young adults have some degree of gingivitis but little or no loss of tooth attachment. Prevalence is high among Hispanics, American Indians, and adults with low incomes.[8] Gingivitis is likely to remain a substantial problem and may even grow as tooth loss due to dental caries declines. An aging population that retains teeth late in life is more likely to suffer the effects of periodontal diseases.

Prevention of periodontal diseases can be accomplished through appropriate oral hygiene (e.g., daily brushing and flossing) and professional care. Such practices minimize both gingival bleeding and loss of tooth attachment. A combination of efforts will be needed to achieve this objective. Both the public and private sectors should implement educational initiatives aimed at increasing public awareness of the causes and effects of periodontal diseases, the importance of patient compliance with correct oral hygiene practices, and regular professional care.

13.6 Reduce destructive periodontal diseases to a prevalence of no more than 15 percent among people aged 35 through 44. (Baseline: 24 percent in 1985-86)

Note: Destructive periodontal disease is one or more sites with 4 millimeters or greater loss of tooth attachment.

Baseline data source: *Oral Health of United States Adults*, NIH.

Among adults, periodontal diseases are a leading cause of bleeding, pain, infection, physical dysfunction, tooth mobility, and tooth loss. The prevalence and severity of destructive periodontal disease, measured by loss of tooth attachment and gingival pocket depth, increase with age and vary by socioeconomic group. The prevalence of periodontal diseases is higher than the national average among American Indians and Alaska Natives,[7] adults with less than a high school education,[16] and migrant workers.[5] Unless preventive measures are taken, the problem of destructive periodontal diseases will grow as the aging population retains teeth later in life.

13.7 Reduce deaths due to cancer of the oral cavity and pharynx to no more than 10.5 per 100,000 men aged 45 through 74 and 4.1 per 100,000 women aged 45 through 74. (Baseline: 12.1 per 100,000 men and 4.1 per 100,000 women in 1987)

Baseline data sources: Surveillance, Epidemiology, and End Results Program, NIH; National Vital Statistics System, CDC.

Cancer of the oral cavity and pharynx will account for about 30,500 new cases of cancer and about 8,350 deaths in 1990.[13] Further, more deaths occur annually as a result of oral cancer than as a result of cervical cancer. These cancers comprise only 3 percent of all cancers in the United States; however, they have severe consequences. Only one-half of the people affected are alive 5 years after diagnosis.[13] Although the overall incidence and mortality rates for oral cavity and pharyngeal cancer are decreasing, rates are increasing in some segments of the population.[13] Yet, this cancer can be prevented. About 75 percent of these cancers are attributable to tobacco and alcohol use.[3] Further, early diagnosis is often possible with oral cancers. The lesions are in an accessible part of the body, usually with well defined signs and symptoms.

Gender differences are apparent in oral cancer rates. Most cases occur in men, but the ratio of the incidence in men compared to women has shifted: in 1950 this ratio was 6:1 and in 1980 the ratio was 2:1.[18] Race differences also exist. Blacks have both higher incidence and mortality rates than those noted in whites. Although the incidence rate among blacks is about 30 percent higher than the white rate, the mortality rate for blacks is twice that of whites. Race differences exist for 5-year survival as well. While 47 percent of whites with these cancers die within 5 years of diagnosis, 69 percent of blacks die within 5 years.

The overall incidence rate for oral cancer has been stable for about 15 years. However, increases have been noted for all women and for all blacks. Overall mortality rates have been decreasing, but mortality rates for black men and black women have been increasing.

Changes in mortality rates for cancer of the oral cavity and pharynx are difficult to demonstrate over a short time span because these cancers have a long latency period with onset late in life. Even significant reductions in smoking and alcohol consumption would not lead to dramatic declines in cancer incidence for many years. However, evidence suggests that reductions in tobacco and alcohol use would contribute to somewhat lower oral cavity and pharyngeal cancer rates in 10 or fewer years. Targets for this objective are based on the estimated impact on mortality of meeting objectives for reductions in tobacco use.

Prompt diagnosis and early treatment also should reduce mortality. According to the U.S. Preventive Services Task Force "there is evidence that persons with early-stage oral cancer have a better prognosis than those diagnosed with more advanced disease."[21] The 5-year relative survival rate for those diagnosed with localized disease is 75 percent, compared to 18 percent in those with distant metastasis at the time of diagnosis. The 5-year relative survival rate for blacks diagnosed with localized disease is much lower (57 percent) than the total population. In addition, blacks are more likely to be diagnosed with more advanced cancers than whites. For the years 1974-86, only 22 percent of lesions diagnosed in blacks were localized, compared to 41 percent of lesions diagnosed in whites. The U.S. Preventive Services Task Force advises that "it may be prudent for clinicians to perform careful examinations of the oral cavity in patients who use tobacco or excessive amounts of alcohol, as well as those with suspicious symptoms or lesions which are detected through self-examination."[21]

Risk Reduction Objectives

13.8 Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children aged 8 and 8 percent of adolescents aged 14 in 1986-87)

Note: Progress toward this objective will be monitored based on prevalence of sealants in children at age 8 and at age 14, when the majority of first and second molars, respectively, are erupted.

Baseline data source: *Oral Health of United States Children*, NIH.

Since the early 1970s, childhood dental caries on smooth tooth surfaces has declined markedly. In 1986-87, approximately 90 percent of the decay in children's teeth occurred in pits and fissures, and almost two-thirds was found on the chewing surfaces alone.[15] Pit-and-fissure sealants—plastic coatings that are applied to susceptible tooth surfaces—have existed for many years. If sealants were applied routinely to susceptible tooth surfaces, most incremental tooth decay among American children could be prevented.

Sealants are most effective when they are applied to teeth just after eruption of the first and second molars—when children are approximately aged 6 through 8 (for first molars) and when they are aged 12 through 14 (for second molars). When applied properly, sealants are exceptionally safe, highly effective, and long lasting.

13.9 Increase to at least 75 percent the proportion of people served by community water systems providing optimal levels of fluoride. (Baseline: 62 percent in 1989)

Note: Optimal levels of fluoride are determined by the mean maximum daily air temperature over a 5-year period and range between 0.7 and 1.2 parts of fluoride per one million parts of water (ppm).

Baseline data source: Fluoridation Census, CDC.

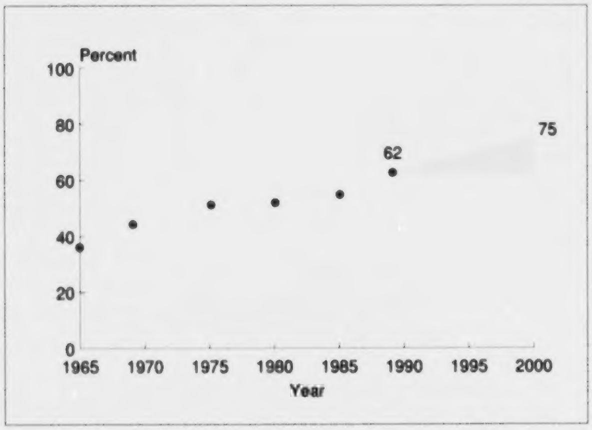


Fig. 13.9

Percentage of people served by community water systems with optimal levels of fluoride

Community water fluoridation is the single most effective and efficient means of preventing dental caries in children and adults, regardless of race or income level.[2] Widespread exposure to fluorides through drinking water and dental products appears to be the primary cause of the declining prevalence of dental caries in the school-age population. While a nationwide decline in caries has occurred in both fluoridated and nonfluoridated communities, caries prevalence is still significantly lower among children in fluoridated areas.

This objective is challenging. The proportion of people served by fluoridated water supplies increased only 8 percent during the 1980s. A concerted national effort will be necessary to reach this target.

13.10 Increase use of professionally or self-administered topical or systemic (dietary) fluorides to at least 85 percent of people not receiving optimally fluoridated public water. (Baseline: An estimated 50 percent in 1989)

Baseline data source: National Health Interview Survey, CDC.

A substantial proportion of the population receives drinking water from nonfluoridated individual sources or nonfluoridated community water systems.[4] Children in these nonfluoridated areas should be exposed to one systemic form of fluoride while tooth enamel is forming; adults in these nonfluoridated areas should be exposed to a topical form of fluoride at optimal levels throughout life. Examples of fluoride treatments include professionally applied topical fluoride, fluoride dentifrice, and fluoride mouth rinses, all of which can prevent initial decay and promote the repair of early-stage caries. Systemic forms include fluoride tablets or drops, vitamin/fluoride combinations, and school water supplies.

Studies are underway to determine the optimal level of aggregate fluoride exposure necessary to prevent tooth decay.

13.11* Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

Special Population Targets

	Appropriate Feeding Practices	*Baseline*	*2000 Target*
13.11a	**Parents and caregivers with less than high school education**	—	**65%**
13.11b	**American Indian/Alaska Native parents and caregivers**	—	**65%**

Baby bottle tooth decay is a severe form of dental caries in toddlers that can lead to destruction of primary teeth. It is caused by frequent or prolonged use of nursing bottles that contain milk, sugared water, fruit juice, or other sugary beverages during the day or night. Continual use of a sweetened pacifier and/or breastfeeding at will throughout the night can also cause baby bottle tooth decay.

The prevalence of baby bottle tooth decay has been estimated at 53 percent among American Indian and Alaska Native Head Start children. Prevalence in the urban population has been estimated at 1 to 11 percent.[1,10] Preventing baby bottle tooth decay will require efforts by many segments of the community, including dental professionals and those who interact with parents and caregivers (e.g., nurses, physicians, preschool teachers). Success in primary prevention has been achieved in American Indian and Alaska Native communities using a comprehensive, multidiciplinary program.

*This objective also appears as Objective 2.12 in *Nutrition*.

Services and Protection Objectives

13.12 Increase to at least 90 percent the proportion of all children entering school programs for the first time who have received an oral health screening, referral, and followup for necessary diagnostic, preventive, and treatment services. (Baseline: 66 percent of children aged 5 visited a dentist during the previous year in 1986)

Note: School programs include Head Start, prekindergarten, kindergarten, and 1st grade.

Baseline data source: National Health Interview Survey, CDC.

Despite dramatic success in the reduction of caries in children over the past 20 years, many oral diseases still appear in young children. Early dental care is an opportunity to educate parents about effective techniques for preventing oral diseases. Since not all children benefit from primary prevention, secondary preventive services, including early diagnosis and prompt treatment, can eliminate pain, infection, and progressive oral diseases.

Unfortunately, early and regular dental care among children is far from universal. In 1986 only 25 percent of children aged 2 had ever visited a dentist; by ages 5 and 7, the proportions increased to 75 percent and 89 percent, respectively.[14] Achievement of this objective could be linked to other medical requirements for children entering school. Special efforts should be made to reach developmentally disabled children, as well as children with other disabling conditions.

13.13 Extend to all long-term institutional facilities the requirement that oral examinations and services be provided no later than 90 days after entry into these facilities. (Baseline: Nursing facilities receiving Medicaid or Medicare reimbursement will be required to provide for oral examinations within 90 days of patient entry beginning in 1990; baseline data unavailable for other institutions)

Note: Long-term institutional facilities include nursing homes, prisons, juvenile homes, and detention facilities.

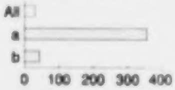
Baseline data source: Health Care Financing Administration.

Residents of institutions face several barriers to obtaining needed dental services. Often residents have multiple chronic diseases, take medications that affect their oral health, and/or have diseases or disabilities that make brushing their teeth and flossing difficult or impossible. A decline in physical and oral health, coupled with multiple medication use and inadequate access to dental care, increases the risks of oral diseases such as candidiasis, root caries, coronal caries, gingivitis, oral mucosal pathologies, and periodontal diseases. Risks for these conditions are also increased by the use of medications that cause dry mouth (xerostomia).

The Surgeon General has recommended that all residents of long-term-care facilities receive a dental examination within 30 days of admission.[17] Similarly, the Veterans Administration recommends that "comprehensive intra-oral and extra-oral examination should be performed as soon as possible, but not longer than 30 days after admission," and that subsequent oral examinations "should be accomplished every 6 months at a minimum."[22] Medicaid and Medicare standards call for all residents of nursing homes and skilled nursing facilities to receive comprehensive health assessments that include residents' dental condition. For newly admitted residents, 1990 requirements call for the assessment to be performed within 4 days of admission.

13.14 Increase to at least 70 percent the proportion of people aged 35 and older using the oral health care system during each year. (Baseline: 54 percent in 1986)

Special Population Targets

	Proportion Using Oral Health Care System During Each Year	*1986 Baseline*	*2000 Target*	*Percent Increase*
13.14a	**Edentulous people**	**11%**	**50%**	
13.14b	**People aged 65 and older**	**42%**	**60%**	

Baseline data source: National Health Interview Survey, CDC.

Oral health care is an important, but often neglected, component of total health care. Regular dental visits are an opportunity for early diagnosis, prevention, and treatment, as well as oral hygiene education. Adults who do not receive regular professional care can develop oral diseases that lead to unnecessary restorative treatment and eventual tooth loss. Edentulous people who do not receive regular dental care frequently develop soft tissue lesions.

In 1986, 57 percent of the population aged 2 and older had visited a dentist within the preceding 12 months, compared with 55 percent in 1983.[13] Use of the oral health care system varied markedly by age: 62 percent of people aged 35 through 44, 58 percent of people aged 45 through 54, 51 percent of people aged 55 through 64, and 42 percent of people aged 65 and older had visited a dentist within the previous 12 months. People with higher incomes and educational levels, children aged 6 through 11, and those with dental insurance were more likely to have visited a dentist. Blacks and Hispanics, as well as older people and those without teeth, were less likely to visit.

13.15 Increase to at least 40 the number of States that have an effective system for recording and referring infants with cleft lips and/or palates to craniofacial anomaly teams. (Baseline: In 1988, approximately 25 States had a central recording mechanism for cleft lip and/or palate and approximately 25 States had an organized referral system to craniofacial anomaly teams)

Baseline data source: Illinois State Health Department.

Cleft lip and palate are reported in 760 to 930 per 100,000 live births and isolated cleft palate is reported in 470 to 570 per 100,000 live births; however, several national and regional studies have found that the incidence of both is underreported.[9] In Illinois, for example, birth certificate data from 1986 to 1988 show underreporting of 35 percent. Improper case ascertainment and undiscovered cases are the primary reasons for underreporting.[9]

Physicians and nurses in hospital nurseries are usually the first to examine newborns and are responsible for noting congenital anomalies and describing them on the medical record. Therefore, hospital personnel must clearly understand the definitions of congenital defects and abnormalities of the lips and palate, properly examine newborns, and record correctly any malformations.

Newborns with cleft lip/palate should be referred immediately to an interdisciplinary team for intervention to minimize the physical and psychosocial trauma that can be associated with eating, drinking, speech, and hearing disorders. Although surgical repair of the lips can be performed soon after birth, repair of the palate should often be delayed several years to allow facial growth and arch development. Prompt professional attention to cleft lip and cleft palate can help prevent these conditions from affecting sound child development.

13.16* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

Baseline data source: Center for Prevention Services, CDC.

*For commentary, see Objective 9.19 in *Unintentional Injuries.*

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the oral health objectives include the following:

- Establish the number and types of health professionals needed to accomplish the practice, educational, and research aspects of the oral health objectives. An adequate supply of appropriately trained dental auxiliaries (dental hygienists, assistants, etc.) is essential for meeting the year 2000 oral health objectives.
- Teach prevention of oral diseases in all schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of prevention of oral disease.
- Provide continuing education through national professional associations whose members have roles in the delivery of health, mental health, education, and related services.

The most pressing need for improvement in professional education and awareness is for greater numbers of family physicians, pharmacists, nurses, and other health professionals to know the primary methods for preventing and controlling dental caries, gingivitis, trauma, periodontal diseases, oral soft tissue lesions, and oral cancer. Primary prevention and control methods include systemic and topical fluorides and dental sealants; mechanical plaque control; chemotherapeutic agents; regular professional examination; knowledge of relations among general medical conditions, medications, and oral conditions; avoidance of tobacco and alcohol; and use of protective mouth and head gear, as well as vehicle safety devices.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing data sources are available to track Objective 13.9.

Periodic surveys and/or supplements to existing surveys can help track Objectives 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.10, 13.11, 13.12, 13.13 (partial source), 13.14, and 13.16.

New data sources are needed to track Objectives 13.13 and 13.15.

High Priority Needs

- If progress in combating oral diseases is to continue, so must monitoring of the national prevalence of dental caries, periodontal diseases, soft tissue lesions, oral cancer, edentulousness, handicapping malocclusions, cleft lip/palate, and head, face, and mouth trauma through the use of health examination surveys.

- Because oral diseases have numerous causes, continuing assessment of the risk factors for oral diseases such as alcohol and tobacco use, infant feeding practices, and exposure to preventive measures (e.g., sealants and fluorides) is needed.
- To assure that prevention is reaching all segments of the population, information on health status and risk factors is needed for all life stages and particularly for specific race, ethnic, and socioeconomic groups.
- In addition to health examination surveys, national surveys are needed to monitor the public's knowledge, attitudes, and behaviors associated with the prevention and control of oral diseases and conditions.
- Because of their proven effectiveness, particular emphasis should be given to programs to provide fluoridation, fluorides, and sealants; tobacco and alcohol prevention and cessation initiatives; and protective head and mouth gear policies.
- To support the national health objective to improve oral health in long-term institutions and facilities, data will be needed on institutional oral health practices.

Research Needs

High priority research needs include:

- Better methods of predicting who will experience caries and periodontal diseases by different levels of severity are needed. Oral diseases affect populations and individuals in unique ways and at different rates.
- Improved methods of delivering disease prevention and health promotion services to adult populations at the community level.
- Clinical decision-making practices of dentists so that dental practice can be improved.
- Characteristics of populations lacking dental insurance. Because of the importance of clinically based primary and secondary prevention services for oral health, and thus the importance of dental insurance coverage, studies are needed to describe the characteristics of people who are not covered by dental insurance.
- The effectiveness of dental providers in counseling patients to quit tobacco use needs further evaluation. Tobacco is a primary risk factor for a broad range of oral conditions.
- The specific etiologies of periodontal diseases and patterns of progression.
- Improved screening and diagnostic capabilities for diagnosing, preventing, and controlling all oral diseases at both patient and population levels.
- More information is needed on xerostomia (dry mouth), a condition becoming increasingly important in an aging population. Specifically, more information is needed on its prevalence and complex etiologies, its contribution to oral diseases, and potential interventions to prevent oral diseases that are promoted by this condition.
- Expanded knowledge of optimal use of fluorides both in drinking water and in dental products to ensure maximum benefits while minimizing the risk of dental fluorosis.

Related Objectives From Other Priority Areas

Nutrition

2.13 Use of food labels

2.14 Nutrition labeling

Tobacco

3.4 Cigarette smoking

3.5 Smoking initiation by youth

3.6 Smoking cessation attempts

3.9 Smokeless tobacco use

3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.8 Alcohol consumption

Educational and Community-Based Programs

8.4 Quality school health education

8.5 Health promotion in postsecondary institutions

8.6 Worksite health promotion activities

8.7 Health promotion activities for hourly workers

8.8 Health promotion programs for older adults

8.10 Community health promotion programs

Maternal and Infant Health

14.15 Newborn screening and followup

14.16 Primary care for babies

Clinical Preventive Services

21.2 Receipt of recommended services

21.3 Access to primary care

21.4 Financial barriers to receipt of services

21.5 Clinical preventive services from publicly funded programs

21.6 Provision of recommended services by clinicians

21.7 Public health department assurance of access

Surveillance and Data Systems

22.4 Gaps in health data

Baseline Data Source References

Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Health Care Financing Administration, U.S. Department of Health and Human Services, Washington, DC.

Hispanic Health and Nutrition Examination Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

Illinois State Health Department, Springfield, IL.

Indian Health Service, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD.

National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Institute of Dental Research, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD.

North Carolina Oral Health School Survey, North Carolina Division of Dental Health, Raleigh, NC, and the University of North Carolina School of Public Health, Chapel Hill, NC.

Oral Health in United States Adults, National Institute of Dental Research, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD.

Oral Health in United States Children, National Institute of Dental Research, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD.

Surveillance, Epidemiology, and End Results Program, National Cancer Institute, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD.

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Maternal and Infant Health

14

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14. Maternal and Infant Health

Introduction

Improving the health of mothers and infants is a national challenge. In 1987, more than 3.8 million infants were born in the United States. Of these, 38,408 died before their first birthday. Black infants died at twice the rate of white infants.[34] Although the infant mortality rate is at an all-time low, the pace of progress has slowed. Important measures of increased risk of death, such as incidence of low birth weight and receipt of prenatal care, show no recent improvement. In addition, a recent study indicates that infant mortality rates for minorities other than blacks have been seriously underestimated.[37]

Numerous and complex variables influence pregnancy outcomes and infant mortality rates including demographic, medical, physical, environmental, educational, behavioral, and attitudinal factors, as well as receipt of care. Possible explanations for the recent slowed rate of progress in preventing infant mortality include:

- Changes in maternal characteristics, such as use of illicit drugs, that may increase the proportion of women entering pregnancy at greater risk for poor pregnancy outcomes;[10]
- A high rate of unintended pregnancy;[35] and
- Approaching maximum benefit from advances in neonatal intensive care.[24]

To achieve further reductions in infant mortality and morbidity, health care providers and individuals must focus on modifying the behaviors and lifestyles that affect birth outcomes. Couples who wish to have children need to know more about reproduction, contraception, and the importance of reducing risks before pregnancy. For example, they should receive comprehensive risk assessments that identify health problems or unhealthy behaviors that are best addressed before pregnancy, such as smoking, substance abuse, poor nutrition, family/genetic history, medical problems and chronic illness, psychosocial problems, and short pregnancy interval.

Approximately one-half of pregnancies in the United States are unintended, either mistimed or unwanted; unintended pregnancy is associated with low birth weight and infant death.[59] The United States' high unintended pregnancy rate may be due to lack of knowledge among sexually active people, failure to translate knowledge into behavior, or lack of family planning services and information.[13] See *Family Planning* for full discussion of these issues.

Women who receive prenatal care in the first trimester have better pregnancy outcomes than women who receive little or no prenatal care. Prenatal care should include three basic components: (1) early and continuing risk assessment; (2) health promotion; and (3) medical, nutritional, and psychosocial interventions and followup.

The leading causes of death for infants are congenital anomalies, sudden infant death syndrome (SIDS), respiratory distress syndrome, and disorders relating to short gestation.[36] The rates of these leading components must be reduced if the maternal and infant health objectives are to be achieved.

More than 250,000 low-birth-weight infants are born each year. Low birth weight is associated with increased risk of death and a wide range of disorders, including neurodevelopmental conditions, learning disorders, behavior problems, and lower respiratory tract infections. One study estimated that approximately 11,000 low-birth-weight infants were born with moderate to severe disabilities in 1985. Aside from personal and emotional costs, these disabilities place a continuing financial burden on the family and may eventually limit the child's ability to work and earn a living in adulthood.[39]

Although the number of maternal deaths per year is small, many are preventable. Further, black women die at about three times the rate of white women. Pregnancy complications and medical complications during pregnancy contribute to maternal, fetal, and neonatal mortality. Another issue related to maternal mortality and morbidity is cesarean delivery. The incidence of cesarean delivery has increased dramatically over the last 20 years in the United States, yet, there is no evidence that maternal and child health has improved as a result. In 1987, nearly one of every 4 babies was delivered by cesarean section in the United States.

Significant reduction of the infant mortality rate and the elimination of racial and ethnic differences in pregnancy outcome will not occur through simple continuation of current effort. A national, State, and local commitment to improving birth outcomes and maintaining healthy infants is imperative. Affecting infant mortality rates requires the removal of financial, educational, social, and logistic barriers to care. Part of the national effort to reduce infant mortality must be assuring that health services are received by those who need them.

Additional research and investigations to identify the factors that cause fetal, infant, and maternal mortality should be conducted so that effective programs can be designed and implemented. Further, the Linked Birth and Infant Death Data Set developed by the National Center for Health Statistics (NCHS) should be maintained. It is an essential tool for expanding the maternal and infant health science base and for improving allocation of resources.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

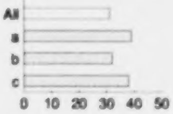
Health Status Objectives

14.1 Reduce the infant mortality rate to no more than 7 per 1,000 live births. (Baseline: 10.1 per 1,000 live births in 1987)

Special Population Targets

	Infant Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1a	**Blacks**	**17.9**	**11**
14.1b	**American Indians/Alaska Natives**	**12.5†**	**8.5**
14.1c	**Puerto Ricans**	**12.9†**	**8**

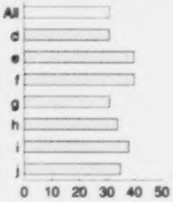
Percent Decrease



Type-Specific Targets

	Neonatal and Postneonatal Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1d	**Neonatal mortality**	**6.5**	**4.5**
14.1e	**Neonatal mortality among blacks**	**11.7**	**7**
14.1f	**Neonatal mortality among Puerto Ricans**	**8.6†**	**5.2**
14.1g	**Postneonatal mortality**	**3.6**	**2.5**
14.1h	**Postneonatal mortality among blacks**	**6.1**	**4**
14.1i	**Postneonatal mortality among American Indians/Alaska Natives**	**6.5†**	**4**
14.1j	**Postneonatal mortality among Puerto Ricans**	**4.3†**	**2.8**

Percent Decrease



†1984 baseline

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

Baseline data sources: National Vital Statistics System, CDC; Linked Birth and Infant Death Data Set, CDC.

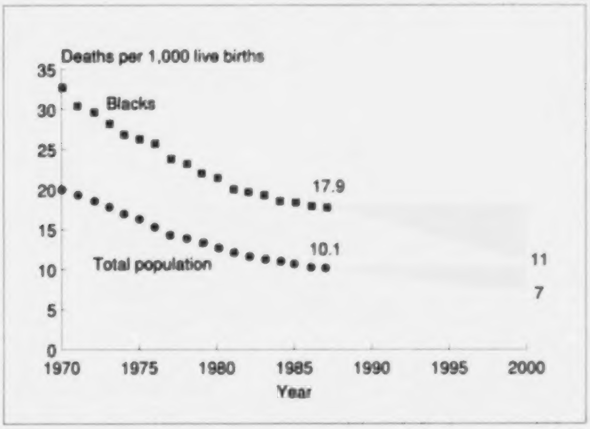


Fig. 14.1
Infant mortality rates

The infant mortality rate has declined steadily over the last quarter century reaching 10.1 in 1987, the lowest rate ever recorded in the United States. The rate of decline, however, has slowed from 4.7 percent per year during the 1970s to 2.8 percent per year during the 1980s. Maintenance of the 2.8 percent decline experienced during the 1980s would result in an infant mortality rate of 7 by the year 2000. This is a formidable target, especially since the most recent provisional data from 1987-89 show an average annual decline of 1.5 percent.

The decline in infant mortality during the 1970s is largely attributable to advances in neonatal intensive care and the dissemination of these advances throughout the Nation causing a marked reduction in birth-weight-specific mortality.[9] The percentage of low weight births declined slightly during the 1970s, but during the 1980s the birth weight distribution remained essentially constant.

Infant mortality rates are usually calculated by dividing the number of infant deaths in a given year (obtained from death certificates) by the number of live births in the same year (obtained from birth certificates). Race-specific infant mortality rates calculated in this way are valid only when the coding of race on both birth and death certificates is comparable. However, results from the 1983 and 1984 Linked Birth and Infant Death Data Set show that the coding for races other than white or black are not comparable. In studies based on these files, which were done for this document, it was possible to compare the race of child on the birth certificate (used as the denominator of the usual infant mortality rate) with race of child on the death certificate (used as the numerator of the usual infant mortality rate) for all infant deaths. Although the race coding for whites and blacks differed by less than 2 percent, from 25 to 40 percent of infant deaths among American Indians and Asian Americans were coded to a different race on the death certificate. For this reason, infant mortality rates for minorities other than blacks should be tracked using the Linked Birth and Infant Death Data Set, which is currently available only for 1983 and 1984, but will be available annually for 1985 and later. The infant mortality rates based on these linked files (using the child's race as reported on the birth certificate) are as follows:

	1983	*1984*
All races	10.9	10.4
White	9.3	8.9
Black	18.9	17.9
American Indian	14.4	12.5
Asian	8.4	8.8

Infant mortality rates are also available for Hispanics in the 23 States and the District of Columbia where Hispanic origin of the mother was coded on the birth certificate. Infant mortality rates based on the linked files are as follows:

	1983	*1984*
Non-Hispanic White	9.2	8.6
Non-Hispanic Black	18.8	17.8
Hispanic	9.5	9.3
Mexican	9.1	8.9
Puerto Rican	12.9	12.9
Cuban	7.5	8.1
Central & South American	8.5	8.3
Other & Unknown Hispanic	10.6	9.6

Only blacks, American Indians, and Puerto Ricans have infant mortality rates substantially higher than the United States average. Unfortunately there are no long-term trend data available to assess the potential for further reductions. For example, the unusually large decline between 1983 and 1984 in American Indian infant mortality may reflect a short-term fluctuation rather than real progress. In the absence of trend data, the infant mortality objectives for these groups are derived from the objectives for neonatal and postneonatal mortality (see below) and set at 8.5 per 1,000 live births for American Indians and at 8.0 per 1,000 live births for Puerto Ricans.

Infant mortality rates vary substantially among and within racial and ethnic groups. The overall American Indian rate does not reflect the diversity among Indian communities, some of which have infant mortality rates approaching twice the national rate. The rate for black infants (17.9 per 1,000 live births in 1987) continues to be twice that of white infants (8.6 per 1,000 live births). Black women are twice as likely as white women to experience prematurity, low birth weight, and infant and fetal death. Blacks are also more likely to be affected by a variety of risk factors related to prolonged social and economic deprivation. Among these are young maternal age, high birth order, less education, and inadequate prenatal care. However, these conditions do not entirely explain the black-white disparity.[22]

A recent study estimated that more than 10 percent of infant deaths could be prevented by effective family planning.[59] Because black women are 2.5 times more likely to have an unplanned birth than white women, effective pregnancy planning is an important intervention in reducing racial differences in pregnancy outcomes.[17]

The annual decline in black infant mortality rates slowed from 4.1 percent per year during the 1970s to 2.2 percent per year in 1981 through 1986, in part, due to an increase in the incidence of live births under 1,500 grams. A target of 11 infant deaths per 1,000 live births among black women implies a 3.5 percent annual decline in mortality rates from 1986 levels. Even if the objectives for low birth weight and very low birth weight are achieved, approximately 3 percent per year declines in birth-weight-specific infant mortality rates will be required to achieve the black infant mortality target. If the birth weight distribution remains unchanged, 4 percent per year declines in weight-specific mortality will be necessary to achieve the target.

Neonatal Mortality

Between 1970 and 1981 the neonatal mortality rate declined by 5.7 percent per year but the decline slowed to 3.5 percent per year between 1981 and 1986. Improvements in infant mortality rates due to neonatal intensive care were especially pronounced in the neonatal period and accounted for much, if not all, of the decrease. Analysis of the 1983 Linked Birth and Infant Death Data Set indicates that there is much greater variation in postneonatal than neonatal birth-weight-specific mortality rates by maternal risk groups. This suggests that improvements in neonatal mortality are less feasible than in postneonatal mortality. For these reasons, the objective of 4.5 deaths per 1,000, a slight slowdown in the annual rate of decline (to 2.8 percent per year), was selected as consistent with what would be feasible over the next decade.

The leading causes of death in the neonatal period are congenital anomalies, respiratory distress syndrome, disorders relating to short gestation, and effects of maternal complications.[35] Survival during the neonatal period is sensitive to improvement in perinatal services, including the technology of newborn intensive care units, high quality prenatal care, and use of obstetric technologies. Further reduction in the neonatal mortality rate requires concentrated attention to reducing low birth weight and congenital anomalies.

As blacks have the highest neonatal mortality rate, achievement of the overall neonatal mortality target will be determined in large part by reductions in neonatal mortality among blacks. Between 1970 and 1981, the neonatal mortality rate among blacks declined by 4.6 percent per year but the decline slowed to 2.7 percent per year between 1981 and 1986. Acceleration in the decline among blacks to 3.6 percent per year is necessary to reach the target. The neonatal mortality rate among ethnic groups other than blacks should be tracked using the Linked Birth and Infant Death Data Set. Results from those files for 1983 and 1984 show the following neonatal mortality rates:

	1983	*1984*
All races	7.1	6.8
White	6.1	5.9
Black	12.3	11.7
Indian	7.0	6.1
Asian	5.0	5.6

Neonatal mortality rates based on the linked files for Hispanics in the 23 States and the District of Columbia where Hispanic origin of the mother was coded on the birth certificate are as follows:

	1983	*1984*
Non-Hispanic White	6.0	5.7
Non-Hispanic Black	11.9	11.3
Hispanic	6.2	6.2
Mexican	5.9	5.8
Puerto Rican	8.7	8.6
Cuban	5.0	6.4
Central & South American	5.8	5.9
Other & Unknown Hispanic	6.4	6.5

Only blacks and Puerto Ricans have neonatal mortality rates substantially higher than the United States average. Unfortunately there are no long-term trend data available prior to 1983 to assess the potential for further reductions among Puerto Ricans. However, the ratio of the black to the overall neonatal mortality rate was 1.72 in 1984 and the year 2000 target reduces this ratio by 9 percent, to 1.56. In 1984, the ratio of the Puerto Rican to the overall neonatal rate was 1.26. If the 9 percent reduction targeted for blacks is applied to this ratio, the result is a ratio of 1.15, so the target for Puerto Ricans is set at 5.2 per 1,000 live births.

Postneonatal Mortality

During the 1970s and 1980s, postneonatal mortality has declined more slowly than neonatal mortality. A partial explanation may be that the reduction in neonatal mortality led to a higher risk profile for the cohort of infants surviving to the postneonatal period.[14] Achievement of the postneonatal targets implies an increase in the rate of decline to 2.8 percent per year. Data from the 1983 Linked Birth and Infant Death Data Set suggests that this is possible. If all infants had achieved the birth-weight-specific postneonatal mortality rate experienced by the lowest risk maternal subgroup (married women in their twenties with 13 or more years education), the overall postneonatal mortality rate would have been about 30 percent lower.

The four leading causes of death in this period are sudden infant death syndrome (SIDS), congenital anomalies, injuries, and infection.[35] SIDS accounts for slightly more than one-third of deaths. The etiology of SIDS has not been identified, although a number of risk factors are known, including maternal smoking and drug use, teenage birth, and infections late in pregnancy. Infants born to families who have experienced a previous SIDS death are also at risk. Improvement in postneonatal mortality requires better knowledge about SIDS and congenital anomalies and improved receipt of services by infants, especially vulnerable infants. Injuries and infections are the most amenable to prevention.

Blacks have a higher postneonatal mortality rate than whites. Between 1970 and 1981, the postneonatal mortality rate among blacks declined by 3.1 percent per year but the rate of decline slowed to 1.3 percent per year between 1981 and 1986. Achievement of the target would require an acceleration in the black rate of decline to 3.2 percent per year. Data from the 1983 Linked Birth and Infant Death Data Set suggest that this is a realistic goal. If all black infants had achieved the birth-weight-specific postneonatal mortality rate experienced by the lowest risk maternal group among blacks (married women in their twenties with 13 or more years of education), the overall postneonatal mortality rate among blacks would have been about 40 percent lower.

The postneonatal mortality rate among ethnic groups other than blacks should be tracked using the Linked Birth and Infant Death Data Set. Results from those files for 1983 and 1984 show the following postneonatal mortality rates:

	1983	*1984*
All races	3.8	3.6
White	3.2	3.1
Black	6.6	6.2
Indian	7.3	6.5
Asian	3.3	3.1

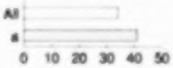
Postneonatal mortality rates based on the linked file for Hispanics in the 23 States and the District of Columbia where Hispanic origin of the mother was coded on the birth certificate are as follows:

	1983	*1984*
Non-Hispanic White	3.2	3.0
Non-Hispanic Black	6.9	6.5
Hispanic	3.3	3.1
Mexican	3.2	3.2
Puerto Rican	4.2	4.3
Cuban	2.5	1.7
Central & South American	2.6	2.4
Other & Unknown Hispanic	4.1	3.1

Of these racial and ethnic groups, only American Indians, blacks, and Puerto Ricans have postneonatal mortality rates substantially higher than the United States average. As before, there are no long-term trend data available prior to 1983 except for blacks to assess the potential for further reductions. However, postneonatal mortality rates for blacks and American Indians are about equal, so the same target can be used for both groups. The ratio of the black to the overall postneonatal mortality rate was 1.72 in 1984 and the year 2000 target reduces this ratio by 7 percent, to 1.6. In 1984, the ratio of the Puerto Rican to the overall postneonatal rate was 1.19. If the 7 percent reduction targeted for blacks is applied to this ratio, the result is a ratio of 1.11. Thus, the target for Puerto Ricans is set at 2.8 per 1,000 live births.

14.2 Reduce the fetal death rate (20 or more weeks of gestation) to no more than 5 per 1,000 live births plus fetal deaths. (Baseline: 7.6 per 1,000 live births plus fetal deaths in 1987)

Special Population Target

	Fetal Deaths	*1987 Baseline*	*2000 Target*	*Percent Decrease*
14.2a	**Blacks**	**12.8**[†]	**7.5**[†]	

[†] *Per 1,000 live births plus fetal deaths*

Baseline data source: National Vital Statistics System, CDC.

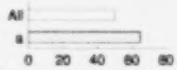
Between 1970 and 1981, the fetal death rate declined by 4.1 percent per year, but the decline slowed to 3.2 percent per year between 1981 and 1986. Maintenance of this decline would result in a fetal death rate of 5 per 1,000 in the year 2000. Monitoring this objective will be complicated by reporting problems. There is evidence that fetal deaths, especially those near the 20-week gestational age cutoff, are underreported.[25] Attempts are now being made to improve reporting. If reporting is improved, the real rate of decline in the fetal death rate will be understated.

Fetal death is associated with pregnancies complicated by maternal factors such as Rh sensitization and diabetes.[46] Improvements in clinical management of such conditions has contributed to reductions in fetal deaths. Sustained clinical management prior to and/or throughout such high-risk pregnancies is needed. Early, comprehensive, risk-appropriate care is of particular importance.

Blacks have the highest fetal death rate of any minority group, so achievement of this objective will be determined in large part by reductions in fetal deaths among blacks. Between 1970 and 1981, the fetal death rate among blacks declined by 4.5 percent per year, but the decline slowed to 2.3 percent per year between 1981 and 1986. Achieving this objective would require an acceleration in the black rate of decline to 3.6 percent per year.

14.3 Reduce the maternal mortality rate to no more than 3.3 per 100,000 live births. (Baseline: 6.6 per 100,000 in 1987)

Special Population Target

	Maternal Mortality	*1987 Baseline*	*2000 Target*	*Percent Decrease*
14.3a	**Blacks**	**14.2†**	**5†**	

†*Per 100,000 live births*

Note: The objective uses the maternal mortality rate as defined by the National Center for Health Statistics. However, if other sources of maternal mortality data are used, a 50-percent reduction in maternal mortality is the intended target.

Baseline data sources: National Vital Statistics System, CDC; Maternal Mortality Surveillance System, CDC.

In 1987, 251 maternal deaths were reported by the National Center for Health Statistics. While this number of deaths is small, maternal mortality remains significant because a high proportion of the deaths are preventable. Additionally, there is an unacceptable racial differential, with black women dying at three times the rate of white women. Achievement of this objective and special population target would reduce the gap between whites and blacks by more than 50 percent. In 1987, black women had a maternal mortality rate of 14.2 per 100,000 live births compared with a rate of 5.1 for white women.

Statistics on maternal mortality are available from national vital statistics published by the National Center for Health Statistics. Counts are based entirely on the physician's certification of cause of death on the death certificate, which the National Center for Health Statistics processes and tabulates according to the classification system, definitions, and rules for selecting underlying cause of death specified by the World Health Organization (WHO) in the International Classification of Diseases, Ninth Revision (ICD-9). According to WHO, "a maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes."[38]

National vital statistics are not designed for studying maternal deaths, and independent studies have found that up to 40 percent of maternal deaths have been misclassified as nonmaternal in State and national vital statistics. Most independent studies of maternal mortality report rates that are higher than those reported by the National Center for Health Statistics. For example, a study of maternal deaths by CDC for 1974 through 1978 revealed that the number of deaths classified by national vital statistics as maternal was 20 percent less than the number classified by State vital statistics.[53] For deaths occurring in 1980 through 1985, selected maternal mortality committees reported 39 percent more deaths than State vital statistics. One study found that the maternal mortality rate for all races was 14.1 per 100,000 live births; for whites the rate was 10.0 and for black and other minority women the rate was 26.7 per 100,000 live births.[48]

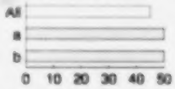
Differing sources of information will therefore influence the rate to be achieved by the year 2000. An absolute rate of 3.3 should be the target only if national vital statistics figures are used. If other sources of information are used, a 50 percent reduction in the 1987 rate is a preferable target. The use of a percentage change will allow the use of any source of reporting.

Review of maternal deaths by maternal mortality review committees in some States, and studies of maternal deaths at the hospital, local, and State level have contributed to our understanding of the risk factors of maternal death, as well as to the evaluation and improvement of the quality of care. However, the very small numbers of maternal deaths in hospitals, even State-wide, make it impossible to make conclusions based on findings from hospital and State based data. A surveillance system has been developed and implemented by CDC to identify, study, and determine causes of maternal death using national aggregated data.

14.4 Reduce the incidence of fetal alcohol syndrome to no more than 0.12 per 1,000 live births. (Baseline: 0.22 per 1,000 live births in 1987)

Special Population Targets

	Fetal Alcohol Syndrome (per 1,000 live births)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
14.4a	**American Indians/Alaska Natives**	**4**	**2**	
14.4b	**Blacks**	**0.8**	**0.4**	



Baseline data source: Birth Defects Monitoring System, CDC.

Heavy alcohol consumption during pregnancy is known to cause alcohol-related defects among infants and fetal alcohol syndrome, which is characterized by growth retardation, facial malformations, and central nervous system dysfunctions including mental retardation.[49] Although the lower limit of safe alcohol consumption during pregnancy has not been documented, it is clear that most known adverse effects in infants are associated with heavy maternal alcohol use. One study found that infants born to mothers who reported consuming two or more drinks each day during pregnancy had, on average, a 7-point decrement in I.Q. at age 7.[55]

American Indians on reservations and blacks seem to bear a disproportionate share of fetal alcohol syndrome-related morbidity.[32] Using data for the period 1981 through 1986 from the CDC birth defects monitoring program, it appears that the rates of fetal alcohol syndrome among American Indians/Alaska Natives and blacks were 33 and 7 times higher than whites, respectively.

In American Indians and Alaska Natives, the incidence of fetal alcohol syndrome varies considerably among tribal group. Baseline and study data for American Indians and Alaska Natives are averages and do not indicate the wide range in incidence experienced from region to region.

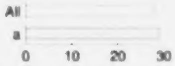
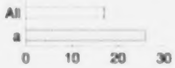
Since fetal alcohol syndrome is directly related to alcohol consumption during pregnancy, it is entirely preventable. Thus a relatively ambitious target, a 50-percent reduction, has been set. It should be noted that surveillance for fetal alcohol syndrome is expected to improve over the coming decade. Legislation enacted in 1989 requires State health departments to begin annual reporting on the incidence of fetal alcohol syndrome as part of their responsibilities under the Maternal and Child Health Block Grant. As a result, the incidence of the condition may appear to increase.

Preventive interventions to reduce maternal use of alcohol include health education to increase awareness of the hazards of alcohol use and identification of alcohol abuse or addiction prior to conception or in early pregnancy.

Risk Reduction Objectives

14.5 Reduce low birth weight to an incidence of no more than 5 percent of live births and very low birth weight to no more than 1 percent of live births. (Baseline: 6.9 and 1.2 percent, respectively, in 1987)

Special Population Target

		1987 Baseline	*2000 Target*	*Percent Decrease*
	Low Birth Weight			
14.5a	**Blacks**	12.7%	9%	
	Very Low Birth Weight			
	Blacks	2.7%	2%	

Note: Low birth weight is weight at birth of less than 2,500 grams; very low birth weight is weight at birth of less than 1,500 grams.

Baseline data source: National Vital Statistics System, CDC.

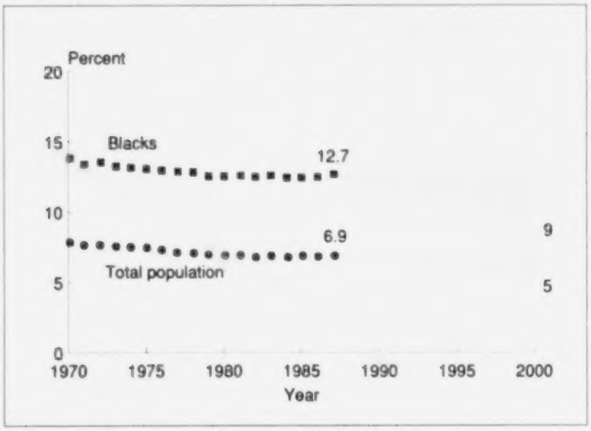


Fig. 14.5

Incidence of low birth weight

From 1970 to 1981, low birth weight declined 1.3 percent per year. The rate was stagnant from 1981 through 1986. Low-birth-weight infants include newborns who are born too early and those whose intrauterine growth is retarded. About two-thirds of the decline in low birth weight during the 1970s was due to a reduction in intrauterine growth retardation and only one-third to reductions in preterm births.[23] A number of risk factors for low birth weight have been identified, including younger and older maternal age, high parity, poor reproductive history (especially history of low birth weight), low socioeconomic status, low level of education, late entry into prenatal care, low pregnancy weight gain and/or low prepregnancy weight, smoking, and substance abuse.[26]

Smoking has been linked to low birth weight and is estimated to be associated with from 20 to 30 percent of all low-birth-weight births in this country.[27] Other behaviors, such as alcohol consumption and illicit drug use are also associated with low birth weight, although the evidence, particularly for alcohol consumption, is less complete than for smoking.[30,54] Certain medical conditions, such as placenta previa and premature rupture of the membranes, are also associated with low birth weight.

A number of recent studies have examined the effects of illicit drug use on pregnancy outcomes, including impaired fetal growth.[60] Infants born to mothers with positive urine assays for either marijuana or cocaine were significantly smaller than the infants of nonusers. Women addicted to cocaine and/or marijuana are also likely to be alcohol and tobacco users.[10]

Available data on disabilities among low-birth-weight infants consider the rate and severity of disability within the different weight categories. In studies of births between 1975 and 1985, 303 children (26 percent) out of 1,169 survivors with birth weights less than 1,500 grams had moderate or severe disabilities. Moderate or severe disabilities are I.Q.s below 80, cerebral palsy, major seizure disorders, and blindness. Among infants with birth weights of less than 2,500 grams, disability rate estimates vary between two percent and 4.5 percent.[42]

Recent trends for blacks for the years 1981 through 1986 show essentially no change in the percentage of infants with low birth weight. The trend must be substantially changed if blacks are to meet the year 2000 low-birth-weight target. Several of the known risk factors for low birth weight, such as maternal cigarette smoking, are more prevalent among black mothers. In addition, there are still disparities in receipt of comprehensive prenatal care between whites and blacks.

Data show an average decline in very low birth weight of about 0.1 percent for the years 1970 to 1981. For the years 1981 through 1986, however, the rate of very low birth weight has *increased* by about 0.9 percent per year. Therefore, given recent trends, it is unlikely that the objective of no more than 1 percent of very low birth weight infants by the year 2000 will be met without a vigorous commitment to providing high quality prenatal care to at-risk women.

Very low birth weight births are primarily associated with preterm birth. Research should focus on better understanding of the mechanisms of preterm delivery and its associated risk factors. As with low birth weight, the use of illicit drugs may increase the risk of very low birth weight births. Specific interventions targeted at preventing drug use among women of childbearing age should be initiated. The negative effects of external factors such as stress and strenuous work during pregnancy also need additional consideration.

For all racial and ethnic groups except blacks and Puerto Ricans, the incidence of very low birth weight is lower than the total population target for the year 2000 target of 1 percent of live births. Recent trends for blacks show an increase in the rate of very low birth weight for the years 1981 through 1986 of about 1.6 percent per year.

14.6 Increase to at least 85 percent the proportion of mothers who achieve the minimum recommended weight gain during their pregnancies. (Baseline: 67 percent of married women in 1980)

Note: Recommended weight gain is pregnancy weight gain recommended in the 1990 National Academy of Science's report, Nutrition During Pregnancy.[19]

Baseline data source: National Natality Survey, CDC.

An infant's birth weight is a major determinant of his or her potential for survival and future development. A strong relationship between pregnancy weight gain and birth weight has been demonstrated consistently, and low maternal weight gain is considered a risk factor that may be susceptible to intervention.[41,43] In 1980, the proportion of low weight births declined from 13.9 percent when weight gain was less than 16 pounds to 6.1 percent for gains of 21 to 25 pounds, and to 4 percent when mothers gained 36 pounds or more.[57]

A low prepregnancy weight combined with a small pregnancy weight gain is associated with a very high incidence of low birth weight. The incidence, however, declines sharply as weight gain rises, regardless of prepregnancy weight.[57]

Approximately one-third of all mothers gain inadequate weight during their pregnancies. Two groups particularly at risk for having low-birth-weight infants and other adverse outcomes of pregnancy, teenagers and black women, both tend to gain less weight during pregnancy than the population as a whole. Higher weight gain for these and other at-risk groups of women, e.g., smokers, is associated with a lower incidence of adverse outcomes.[19]

Caloric intake is associated with pregnancy weight gain and pregnancy outcome. Although a pregnant woman can gain adequate weight regardless of the nutritional quality of her diet, the goal is to promote desired weight gain through sound dietary practices and a nutritionally adequate diet. Factors other than nutritional intake that influence pregnancy weight gain, such as smoking, strenuous physical work, and chronic illness must be taken into account for nutritional management during pregnancy.

14.7 Reduce severe complications of pregnancy to no more than 15 per 100 deliveries. (Baseline: 22 hospitalizations (prior to delivery) per 100 deliveries in 1987)

Note: Severe complications of pregnancy will be measured using hospitalizations due to pregnancy-related complications.

Baseline data source: National Hospital Discharge Survey, CDC.

Complications of pregnancy are associated with maternal mortality and perinatal morbidity and mortality, as well as chronic conditions for both mothers and their babies. In addition, complications of pregnancy lead to a loss of productivity, generate substantial hospital costs, and cause emotional distress among families.

In 1987, approximately 860,000 hospitalizations were for pregnancy-related complications not associated with delivery. Of these admissions, approximately 27 percent involved preterm labor; 9 percent, spontaneous abortion; 8 percent, genitourinary infection; 8 percent, hemorrhage during early pregnancy; 7 percent, vomiting; 6 percent, pregnancy-induced hypertension; 5 percent, diabetes mellitus; and 4 percent, missed abortion.

Achieving this objective will require greater attention to determining the etiology of, and effective interventions for, serious complications, with reductions varying by type of complication. This objective targets reductions in all pregnancy related complications. However, complications treated without hospitalization are very difficult to track. Hospitalizations are used as a proxy for all severe complications of pregnancy. The objective should not be interpreted as advocating reductions in hospitalization per se. In many instances, hospitalization is necessary for treatment.

14.8 Reduce the cesarean delivery rate to no more than 15 per 100 deliveries. (Baseline: 24.4 per 100 deliveries in 1987)

Type-Specific Targets

	Cesarean Delivery (per 100 deliveries)	*1987 Baseline*	*2000 Target*
14.8a	**Primary (first time) cesarean delivery**	**17.4**	**12**
14.8b	**Repeat cesarean deliveries**	**91.2[†]**	**65[†]**

[†] *Among women who had a previous cesarean delivery*

Baseline data source: National Hospital Discharge Survey, CDC.

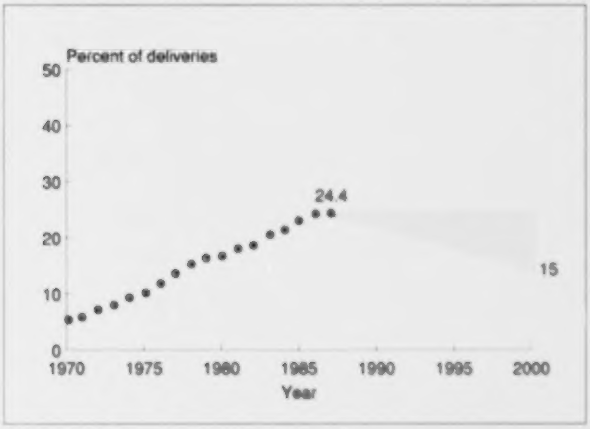


Fig.14.8

Cesarean delivery rate

Cesarean delivery rates in the United States have increased each year since 1965. Yet, there is no evidence that maternal and child health has improved as a result of this increase. Cesarean delivery carries an increased risk of maternal mortality and morbidity, as well as an increased risk of perinatal morbidity.[56] Maternal mortality rates associated with cesarean deliveries have been reported to range from 2 to 26 times that associated with vaginal delivery, and, in 1986, the average length of hospital stay for cesarean deliveries was 6 days compared with 3 for vaginal deliveries.[6,45,50] The increased mortality risk may, however, be partially due to the lack of adjustments for conditions causing the cesarean delivery. If rates continued rising at the current pace, cesarean deliveries would account for 29 percent of all deliveries in 1990, and 40 percent in the year 2000. However, recent estimates for 1987 indicate that the rates of cesarean delivery may be reaching a plateau.

To reduce the cesarean delivery rate, one hospital recently evaluated the effect of selected clinical criteria and review mechanisms (e.g., requiring a second opinion, recognizing vaginal birth after previous cesarean delivery as the preferred method, instituting a peer review process).[33] Findings indicated a decrease in the rate from 17.5 percent of total deliveries in 1985 to 11.5 percent in 1987. It should be noted that this decrease occurred at a time when national rates were rising.

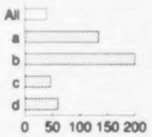
Other recommendations for decreasing cesarean delivery rates include: eliminating incentives for physicians and hospitals such as equalizing reimbursement for vaginal and cesarean deliveries; public dissemination of physician- and hospital-specific cesarean delivery rates to increase public awareness of differences in practice; and addressing malpractice concerns, which may be a strong driving force behind the increasing rates of cesarean delivery.

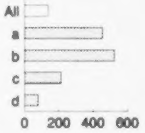
From 1980 to 1985, 48 percent of the increase in the cesarean delivery rate was due to repeat cesarean deliveries. The American College of Obstetricians and Gynecologists (ACOG) issued guidelines in October 1988 on repeat cesarean deliveries based on a finding that "a trial of labor [is] successful in 50 to 80 percent of patients who had low transverse uterine incisions from previous deliveries and who were selected candidates for vaginal birth in subsequent pregnancies."[4] ACOG recommended that each hospital develop its own protocol for management of patients with previous cesarean delivery. These guidelines recommend that in the absence of a contraindication, women with one previous cesarean delivery with a low transverse incision should be counseled and encouraged to attempt labor in their current pregnancy.

14.9* Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*	*Percent Increase*
	During Early Postpartum Period—			
14.9a	**Low-income mothers**	32%	75%	
14.9b	**Black mothers**	25%	75%	
14.9c	**Hispanic mothers**	51%	75%	
14.9d	**American Indian/Alaska Native mothers**	47%	75%	
	At Age 5-6 Months—			
14.9a	**Low-income mothers**	9%	50%	
14.9b	**Black mothers**	8%	50%	
14.9c	**Hispanic mothers**	16%	50%	
14.9d	**American Indian/Alaska Native mothers**	28%	50%	





Baseline data sources: Ross Laboratories Mothers Survey; for American Indians and Alaska Natives, Pediatric Nutrition Surveillance System, CDC.

Breastfeeding is the optimal way of nurturing full-term infants while simultaneously benefiting the lactating mother. The advantages of breastfeeding range from biochemical, immunologic, enzymatic, and endocrinologic to psychosocial, developmental, hygienic, and economic. Human milk contains the ideal balance of nutrients, enzymes, immunoglobulin, anti-infective and anti-inflammatory substances, hormones, and growth factors.[16] Further, breast milk changes to match the changing needs of the infant. Breastfeeding provides a time of intense maternal-infant interaction. Lactation also facilitates the physiologic return to the prepregnant state for the mother while suppressing ovulation for many.[29]

Although breastfeeding is strongly recommended, it is not appropriate for babies whose mothers use drugs such as cocaine, PCP, or marijuana, take more than minimal amounts of alcohol, or who receive certain therapeutic or diagnostic agents such as radioactive elements and cancer chemotherapy. Women who are HIV positive should also avoid breastfeeding.

Analysis of data from the Ross Laboratories Mothers Survey indicates that breastfeeding rates continue to be highest among women who are older, well-educated, relatively affluent, and/or who live in the western United States (71 percent at discharge from birth site and 31 percent at 5 to 6 months). Among those least likely to breastfeed are women who are low-income, black, less than age 20, and/or who live in the southeastern United

States. Low-income and black women should receive special attention because they have low rates of breastfeeding and are a significant proportion of all new mothers (approximately 25 percent and 17 percent, respectively).[31]

An important barrier to achieving this objective is the general absence of work policies and facilities that support lactating women. Given the large percentage of mothers of young children who work outside the home, efforts to increase breastfeeding should focus on convincing employers to provide assistance such as extended maternity leave, part-time employment, provision of facilities for pumping breast milk or breastfeeding, and on-site child care. Another important barrier is portrayal of bottle rather than breastfeeding as the norm in American society and the absence of breastfeeding incentives and support for low-income women. Overcoming these barriers will require public and professional education, improved support from health care providers and employers, and the involvement of culturally sensitive social, religious, and professional groups. The media can play an important role by more frequently portraying breastfeeding as the norm.

*This objective also appears as Objective 2.11 in *Nutrition*.

14.10 Increase abstinence from tobacco use by pregnant women to at least 90 percent and increase abstinence from alcohol, cocaine, and marijuana by pregnant women by at least 20 percent. (Baseline: 75 percent of pregnant women abstained from tobacco use in 1985)

Note: Data for alcohol, cocaine, and marijuana use by pregnant women will be available from the National Maternal and Infant Health Survey, CDC, in 1991.

Baseline data sources: For cigarette smoking, National Health Interview Survey, CDC.

Poor pregnancy outcomes due to maternal smoking, alcohol, and/or illicit drug use are well documented. Smoking is closely associated with low birth weight.[27] Heavy alcohol consumption is associated with fetal alcohol syndrome which is characterized by growth retardation, facial malformations, and central nervous system dysfunctions including mental retardation.[49] Illicit drug use, most notably the use of cocaine by women, is associated with fetal distress and impaired fetal growth,[30,60] and may result in ongoing developmental problems during and after infancy.[18]

In 1985, 25 percent of pregnant women used tobacco. Warning labels on cigarette packages now alert users to the danger to the fetus. Warning labels on alcoholic beverages concerning the dangers of alcohol use during pregnancy may reduce consumption of alcoholic beverages during pregnancy. Ideally, abstention from alcohol use by women who are pregnant or who anticipate becoming pregnant, would become the norm among American women. Preconception counseling by health care providers, especially nurse midwives and obstetricians, could reinforce public awareness messages on tobacco products and alcoholic beverages.

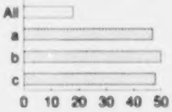
Services and Protection Objectives

14.11 Increase to at least 90 percent the proportion of all pregnant women who receive prenatal care in the first trimester of pregnancy. (Baseline: 76 percent of live births in 1987)

Special Population Targets

	Proportion of Pregnant Women Receiving Early Prenatal Care	*1987 Baseline*	*2000 Target*
14.11a	**Black women**	**61.1†**	**90†**
14.11b	**American Indian/Alaska Native women**	**60.2†**	**90†**
14.11c	**Hispanic women**	**61.0†**	**90†**

Percent Increase



†*Percent of live births*

Baseline data source: National Vital Statistics System, CDC.

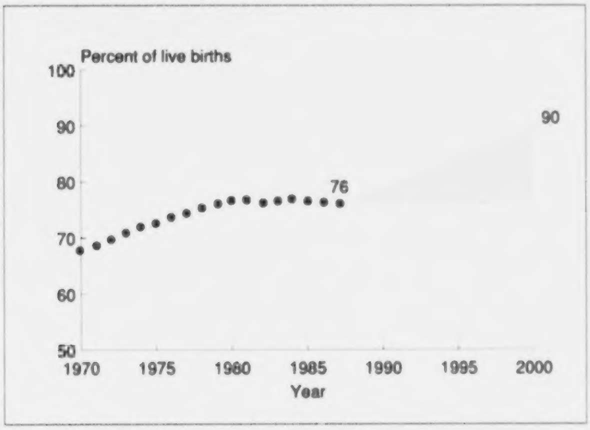


Fig. 14.11

Percentage of pregnant women receiving first trimester prenatal care

Early, high-quality prenatal care is critical to improving pregnancy outcomes. Prenatal care is especially important for women at increased medical and/or social risk. For example, women who are substance abusers are unlikely to get prenatal care.[21] Maternal characteristics associated with receiving late or no prenatal care include low income, less than a high school education, teenage pregnancy, and a large number of children.[52]

Low income has been consistently correlated with lack of early and sufficient care. More than 14 million women of reproductive age have no insurance to cover maternity care.[1] Recent Congressional mandates expanding Medicaid have resulted in more women being eligible for prenatal and postpartum care, but difficulties remain in getting eligible women into care. In addition, there is a growing shortage of obstetrical providers, often attributed to rising malpractice insurance rates.[20] Expanding the number of maternity providers through increased use of certified nurse midwives and nurse practitioners could help alleviate this problem.

Between 1970 and 1980, there was a significant trend toward increasing early entry into prenatal care. Increases were especially large for the groups with the lowest levels of care. Since 1980, however, the proportion of women who begin prenatal care in the first trimester of pregnancy has reached a plateau among all racial and ethnic groups. Of special concern is the increase between 1982 and 1987 in the proportions of women not receiving care until their third trimester or receiving no care. Because of the lack of progress in this area, the target proposed for the year 2000 is the same as the target set for 1990.

14.12* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

The purpose of providing preconception care and information is to ensure that women are healthy prior to beginning pregnancy, thereby reducing the risk of adverse pregnancy outcomes. Such care should be available to all women desiring pregnancy and their partners. Many medical conditions, personal behaviors, and environmental conditions associated with poor pregnancy outcomes can be identified and modified or treated prior to conception.

Awareness of illness or conditions such as diabetes, which should be controlled before pregnancy, is beneficial in planning pregnancy. Strict glucose control before conception and throughout gestation, coupled with close management, can be effective in reducing adverse outcomes among offspring of women with diabetes. One and a half million women of childbearing age are diabetic. In diabetic women, infection occurs with greater frequency and severity; the likelihood of hypertension increases fourfold; injury to the birth canal is more common because of the tendency to larger babies; cesarean sections are required more frequently; and hemorrhage after delivery is more likely.[35] Intervention in other illnesses or conditions prior to pregnancy, such as poor nutrition or phenylketonuria which require diet modification, would be beneficial, as would counseling concerning HIV.

Preconception identification of women with medical illness or unhealthy behaviors and couples at risk for offspring with genetic disorders provides the opportunity to inform and counsel on the hazards of unhealthy behaviors, appropriate treatment, the risks of genetic disorders in their offspring, pregnancy planning, early entry into prenatal care, or avoidance of pregnancy. Family planning services and education must be an integral part of preconception care to reduce the large number of unintended pregnancies in this country and to assure adequate spacing between pregnancies.[47]

Identification of, and intervention to modify, maternal behaviors such as smoking and alcohol use and/or use of illicit drugs should occur prior to pregnancy. As damage to the fetus from drug and/or alcohol use can occur early in pregnancy, intervention to modify or eliminate the behavior(s) prior to pregnancy is crucial. Counseling regarding drug use must also include use of prescription medications during pregnancy, since some drugs have been documented as powerful teratogens. For example, about 25 percent of human fetuses exposed to isotretin during the first trimester are affected with severe congenital abnormalities and other developmental disabilities.[28]

Primary care providers should not limit counseling to maternal behavior. The behaviors of other household members can also affect pregnancy outcome. For example, recent reports suggest that exposure to environmental tobacco smoke during pregnancy may be associated with low birth weight.[51]

*This objective also appears as Objective 5.10 in *Family Planning*.

14.13 Increase to at least 90 percent the proportion of women enrolled in prenatal care who are offered screening and counseling on prenatal detection of fetal abnormalities. (Baseline data available in 1991)

Note: This objective will be measured by tracking use of maternal serum alpha-fetoprotein screening tests.

Prenatal screening can be used to identify serious disorders which have long term consequences for infants and their families. The purpose of such screening is to allow for initiation of interventions to ameliorate the consequences of the disorders through counseling and specialized obstetric and neonatal care.

Maternal serum alpha-fetoprotein (MSAFP) testing was initially employed in the early 1970s as a screening test to detect neural tube defects in fetuses. As experience with the test grew, it became evident that an abnormal level of MSAFP was an indicator of several other conditions such as twin pregnancy, ventral wall defects, Down Syndrome, and fetal demise.[7,44]

MSAFP screening carried out at 15 to 18 weeks of pregnancy is now the standard of care for women enrolling in early prenatal care. The test is not informative at other stages of pregnancy. Abnormal levels of MSAFP indicate a need for further tests such as ultrasonography and amniocentesis. In the event of a fetal abnormality, testing and counseling early in pregnancy provides an opportunity for families to prepare to care for a disabled infant, and increasingly, for medical interventions to correct some problems *in utero*. Women should be informed about the availability of this screening technique at their initial prenatal care visit.

After licensure of a commercially produced test kit by the Food and Drug Administration, the American College of Obstetricians and Gynecologists (ACOG) issued an alert to its members in 1985, strongly recommending that every prenatal patient be advised of the availability of this test.[6] Current ACOG standards recommend that MSAFP screening be offered to all patients.[5] Since 1986, California has required that the test be offered to all pregnant women who register for care before the end of the period in which the test is effective.

14.14 Increase to at least 90 percent the proportion of pregnant women and infants who receive risk-appropriate care. (Baseline data available in 1991)

Note: This objective will be measured by tracking the proportion of very low birth weight infants (less than 1,500 grams) born in facilities covered by a neonatologist 24 hours a day.

The course of pregnancy is a dynamic process in which a woman's risk status can change at any point. Therefore, comprehensive and coordinated mechanisms should be in place to match the intensity of health care to the pregnant woman's and infant's degree of risk.

Implementing coordinated systems of perinatal care and assuring receipt of risk-appropriate care have been inhibited by changing circumstances in health care delivery, in spite of established standards by professional organizations. These inhibiting factors include increased competition and changes in financing mechanisms, advances in medical technology, changing patterns of medical practice and care delivery, legal and liability issues, and diffusion of specialists.[11]

The quality assurance mechanisms needed to measure this objective (e.g., chart audits) are not feasible for obtaining national data estimates. However, a proxy measure, such as the percentage of very low birth weight infants referred for delivery to a facility that provides high-risk care for mothers and infants, would be indicative of risk-responsive care.

14.15 Increase to at least 95 percent the proportion of newborns screened by State-sponsored programs for genetic disorders and other disabling conditions and to 90 percent the proportion of newborns testing positive for disease who receive appropriate treatment. (Baseline: For sickle cell anemia, with 20 States reporting, approximately 33 percent of live births screened (57 percent of black infants); for galactosemia, with 38 States reporting, approximately 70 percent of live births screened)

Note: As measured by the proportion of infants served by programs for sickle cell anemia and galactosemia. Screening programs should be appropriate for State demographic characteristics.

Baseline data source: Council of Regional Networks for Genetic Services.

Virtually all States screen infants for genetic and metabolic disorders and treat or refer for treatment those with a confirmed diagnosis. However, some disorders are more uniformly screened for than others, and followup testing and early initiation of preventive treatment is uneven. It is crucial that State commitment to screening is accompanied by commitment to treatment of affected newborns discovered through screening. States should screen for additional conditions only when they are committed to treating newborns discovered to have disease. Further, States should add only those screening tests which are efficient and effective, e.g., accurate (they detect the disorder in question); reliable (do not produce excessive false positives or false negatives; useful (treatment is available for the disorder); and affordable.

Screening for PKU and congenital hypothyroidism is virtually universal, although reporting is not. While it is important to continue screening and appropriate followup for these disorders and to improve reporting, it is the intent of this objective to focus on two disorders for which screening and followup has been less consistent, sickle cell anemia and galactosemia.

Sickle cell diseases affect 1 in every 400 black newborns. These and other hemoglobinopathies are common in people of African, Asian, Mediterranean, Caribbean, and South and Central American origins.[40] While universal screening for sickle cell is recommended, States with negligible at-risk populations may choose to target their testing programs.

Significant mortality and morbidity are associated with sickle cell because of increased susceptibility to severe bacterial infections. Meningitis, pneumonia, and septicemia are major causes of death among children with the disorder.[15] Early diagnosis and immediate entry into programs of comprehensive care, including the initiation of penicillin prophylaxis, has been found to reduce the morbidity and mortality associated with sickle cell.[15]

The inherited disorder of galactosemia leads to an increased risk of death from overwhelming infection in early infancy, with failure to thrive, vomiting, liver disease, and mental retardation in untreated survivors. A galactose-free diet should be begun as soon as possible and continued throughout life.[2] Treatment should be initiated within the first week of life to avoid early death, but 1988 data indicated that only 37 percent of the cases reported met this criterion.[12]

14.16 Increase to at least 90 percent the proportion of babies aged 18 months and younger who receive recommended primary care services at the appropriate intervals. (Baseline data available in 1992)

Assuring that infants receive appropriate primary care will help reduce infant mortality and childhood disease through prevention and early identification of health problems, including developmental and emotional problems. Achievement of this objective requires resolution of the issues of financing of care and acceptability of care. Barriers to achievement include a lack of knowledge about the value of preventive services (by both providers and parents), inability to pay for care, and geographic and personnel limitations.

Another important challenge for the delivery of primary care services is the fragmentation that often characterizes health care services delivery. If primary care is to reduce infant mortality and childhood morbidity, primary care providers must be linked to providers of specialty care. To establish these crucial links, primary care providers must identify children who need specialized attention, know suitable specialty resources, make appropriate and timely referrals, and work collaboratively with those providing care.

Only a few studies have examined the receipt of sets of services. One study found that although 93 percent of newborns had received at least one well-care examination, only 44 percent had received three or more doses of diphtheria-pertussis-tetanus (DPT) vaccine and three or more doses of polio vaccine by age 18 months. An ambulatory care quality assurance study also found well-baby care inadequate in delivering complete sets of preventive services.

Two sets of recommendations could be used to track progress toward this objective. The American Academy of Pediatric's Committee on Practice and Ambulatory Medicine publishes a recommended set of preventive services for infants in its *Guidelines for Health Supervision.*[3] Another useful set is the U.S. Preventive Services Task Force recommendations for infants contained in its *Guide to Clinical Preventive Services.*[58]

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the maternal and infant health objectives include the following:

- Determine the number and types of health professionals needed to accomplish the practice, educational, and research aspects of the maternal and infant health objectives.
- Provide continuing education on maternal and infant health through national professional associations whose members have roles in the delivery of related services.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing data sources are available to track Objectives 14.1, 14.2, 14.3, 14.5, 14.7, 14.8, 14.9, and 14.11.

Periodic surveys and/or supplements to existing surveys can help track Objectives 14.4, 14.6, 14.10, 14.13, 14.14, and 14.15.

New data sources are needed to track Objectives 14.12 and 14.16.

High Priority Needs

Improved data and information on maternal and infant health problems and trends are needed at the national, State, and local levels to aid in development of appropriate strategies and priorities. Specific recommendations include:

- Maintenance of the Linked Birth and Infant Death Data Set.

- Continued improvement in the accuracy and breadth of infant and fetal death data to address problems of underestimation (particularly among racial and ethnic minority groups) and to expand the information base regarding contributing factors.
- Development and expansion of State-level health status and services use data, using systems such as those required for annual reporting under the Maternal and Child Health Block Grant.
- Development and use of a surveillance system to monitor trends in childhood morbidities.

Research Needs

Priorities include investigation of:

- The etiology of preterm birth generally, and very low birth weight specifically, including investigations into the physiology of uterine activity and the physiology and chemical events that influence fetal growth and development.
- Reasons for the exceedingly high rate of low birth weight among blacks.
- Effective methods for modifying unhealthy behavior among pregnant women (e.g., tobacco, alcohol, and/or drug use).
- Methods of improving prenatal and perinatal care services for high-risk populations and increasing acceptability and use of services.
- Factors associated with care-seeking behaviors and effective methods for improving use of prenatal care.
- The etiology and prevention of congenital anomalies and sudden infant death syndrome.
- The etiology and preventive management of severe complications of pregnancy, such as vomiting and pregnancy-induced hypertension.

Related Objectives From Other Priority Areas

Nutrition

2.4 Growth retardation
2.10 Iron deficiency

Tobacco

3.4 Cigarette smoking
3.7 Smoking cessation during pregnancy

Alcohol and Other Drugs

4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Family Planning

5.1 Adolescent pregnancy
5.2 Unintended pregnancy
5.6 Contraception use by sexually active adolescents
5.7 Effective family planning

Mental Health and Mental Disorders

6.14 Clinician assessment of children's mental functioning

Violent and Abusive Behavior

7.4 Child abuse and neglect
7.5 Partner abuse
7.15 Shelter space for battered women

Educational and Community-Based Programs

8.4 Quality school health education
8.10 Community health promotion programs

Unintentional Injuries

9.12 Motor vehicle occupant protection systems
9.21 Injury prevention counseling by clinicians

Occupational Safety and Health

10.8 Occupational lead exposure
10.15 Clinician assessment of occupational health exposures

Environmental Health

11.4 Blood lead levels

Oral Health

13.11 Baby bottle tooth decay

13.15 Oral health care for infants with cleft lip and/or palate

Diabetes and Chronic Disabling Conditions

17.8 Mental retardation

17.9 Diabetes-related deaths

17.10 Diabetes-related complications

17.15 Clinician assessment of child development

17.16 Earlier detection of hearing impairment in children

17.20 Service systems for children with or at risk of chronic and disabling conditions

HIV Infection

18.2 HIV infection

18.8 Testing for HIV infection

18.9 Clinician counseling to prevent HIV and other sexually transmitted diseases

Sexually Transmitted Diseases

19.1 Gonorrhea

19.2 Chlamydia

19.3 Syphilis

19.4 Congenital syphilis

19.6 Pelvic inflammatory disease

19.7 Hepatitis B

19.11 Clinic services for HIV and other sexually transmitted diseases

19.14 Clinicians counseling to prevent sexually transmitted diseases

Immunization and Infectious Diseases

20.3 Viral hepatitis

20.11 Immunizations

Clinical Preventive Services

21.2 Receipt of recommended services

21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

Baseline Data Source References

Birth Defects Monitoring System, Center for Environmental Health and Injury Control, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Council of Regional Networks for Genetic Services, Phoenix, AZ.

Maternal Mortality Surveillance System, Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Hospital Discharge Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

Linked Birth and Infant Death Data Set, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Maternal and Infant Health Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Vital Statistics System, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

Pediatric Nutrition Surveillance System, Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

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Heart Disease and Stroke

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15. Heart Disease and Stroke

Introduction

Over the past 15 years, the death rate for cardiovascular disease (diseases of the heart and blood vessels) has declined dramatically: 35 percent for all cardiovascular diseases, 40 percent for coronary heart disease, and more than 50 percent for stroke. Changes in lifestyles and risk factor reduction were major contributors to this decline. New technology, improved pharmacology, better surgical techniques, and more effective medical management also contributed to this decline in mortality. Still, cardiovascular diseases—primarily coronary heart disease and stroke—kill nearly as many Americans as all other diseases combined.[15] Cardiovascular disease is also among the leading causes of disability.

The major modifiable risk factors for cardiovascular disease are high blood pressure, high blood cholesterol, and cigarette smoking. This chapter addresses broad, cross-cutting issues related to coronary heart disease and stroke but focuses primarily on the detection, evaluation, and management of high blood pressure and high blood cholesterol. Smoking is addressed in a separate section of this report, as are other cardiovascular risk factors such as obesity (see *Nutrition*), physical inactivity (see *Physical Activity and Fitness*), and diabetes mellitus (see *Diabetes and Chronic Disabling Conditions*).

People with high blood pressure have three to four times the risk of developing coronary heart disease and as much as seven times the risk of a stroke as do those with normal blood pressures.[2] Clinical trials show that blood pressure reduction significantly reduces stroke mortality. Recent long-term followup of the Hypertension Detection and Follow-Up Program clinical trial suggests that blood pressure control can also help to reduce deaths from coronary heart disease.[8]

Approximately 30 percent of adults have high blood pressure (blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or taking antihypertensive medication).[17] High blood pressure prevalence increases with age, ranging from a low of 2 percent for white females aged 18 through 24, to 83 percent for black females aged 65 through 74. Overall, blacks have a higher prevalence of high blood pressure than whites (38 percent versus 29 percent).[17] The second National Health and Nutrition Examination Survey (NHANES II) provides the most current national data on hypertension prevalence, the percentage of hypertensives who are aware of their condition, and the percentage who have their blood pressure under control. NHANES II found that 54 percent of hypertensive adults (based on a threshold of 140/90 mm Hg) were aware of their high blood pressure, but only 11 percent had their blood pressure under control (maintain a blood pressure less than 140 mm Hg systolic and 90 mm Hg diastolic). More recent data from the Seven States Study, collected in 1982-84, indicate that 66 percent of hypertensives were aware of their condition, but only 24 percent had achieved adequate control.[24] Clearly, further efforts to promote better blood pressure control are needed despite the relatively high level of detection and awareness.

The causal relationship of high blood cholesterol to coronary heart disease also has been demonstrated. Data from the Framingham Study showed that coronary heart disease mortality and morbidity increase as blood cholesterol levels rise.[2] The Coronary Primary Prevention Trial showed that people who received a cholesterol-lowering diet and medication achieved a 9-percent greater reduction in blood cholesterol levels relative to the placebo group and had a 19-percent lower incidence of coronary heart disease.[13]

About 60 million American adults have high blood cholesterol levels requiring medical advice and intervention using diet as the primary treatment.[31] Mean blood cholesterol levels for men and women were 211 mg/dL and 215 mg/dL, respectively, in 1976-80.[14] Further efforts in cholesterol detection, education, and proper treatment are needed to reach the year 2000 targets. Definition and treatment guidelines for the cholesterol objectives are based on the *Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults* (Adult Treatment Panel report) released in 1988 by the National Cholesterol Education Program.[21] Whereas these guidelines represent current scientific information, the year 2000 objectives must be evaluated and modified as necessary to reflect the evolving science base.

Smoking, the other major modifiable risk factor for cardiovascular disease, is discussed in a separate section of this report (see *Tobacco*). Smoking is a major cause of coronary heart disease in men and women and is associated with increased risk of stroke.[25] Studies have shown that smoking cessation can substantially reduce the coronary heart disease death rate, even among older adults. Benefits may become evident as soon as 2 years after quitting. Furthermore, smoking cessation can reduce stroke risk significantly: 5 years after smoking cessation, the former smoker is no more at risk than a person who had never smoked.

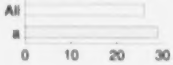
Despite many and varied prevention efforts, approximately 7 million Americans are affected by coronary heart disease[23] and need to be aware of proper action should they develop signs and symptoms associated with a heart attack. Immediate action at the first evidence of a heart attack is critical in saving heart tissue, thereby reducing morbidity and mortality from coronary heart disease. Many of the 300,000 sudden deaths each year, which are largely the result of ischemia-induced ventricular fibrillation, could be prevented if given immediate medical attention. Physicians, nurses, emergency medical technicians, paramedics, and other health care professionals must be urged to counsel their patients, particularly high-risk patients (such as those with elevated blood cholesterol and blood pressure), to respond immediately and appropriately at the first evidence of a heart attack.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

15.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
15.1a	**Blacks**	**163**	**115**	

Baseline data source: National Vital Statistics System (special analysis), CDC.[29,30]

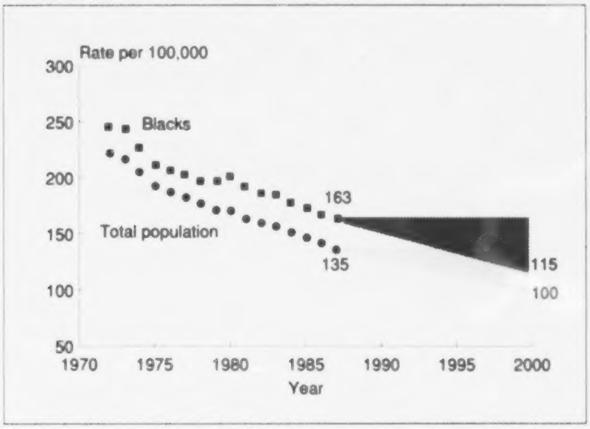


Fig. 15.1

Age-adjusted coronary heart disease death rates

The death rate for coronary heart disease has declined by 40 percent over the past 15 years. Despite this progress, coronary heart disease continues to be the leading cause of death in the United States. It affects about 7 million Americans, causes over 500,000 deaths annually, and costs the Nation approximately $43 billion per year in direct and indirect costs.

Further reductions in coronary heart disease mortality may be achieved through advances in treatment. Early intervention (prompted by early recognition of an impending heart attack) has the potential to reduce or postpone some of the mortality due to this condition. But the greatest potential for reducing coronary heart disease morbidity, disability, and mortality appears to rest with prevention.

Many factors influence not only whether a person will develop coronary heart disease, but also how rapidly atherosclerosis progresses. Genetic predisposition, gender, and advancing age are recognized factors over which individuals have little control. Key modifiable factors include cigarette smoking, high blood cholesterol, high blood pressure, excessive body weight, and long-term physical inactivity. Control of each of these factors is important in the prevention of coronary heart disease. People with diabetes, who are especially prone to vascular disease, may benefit by controlling these other risk factors. Risk factor reduction in those who already suffer from coronary heart disease and are at increased risk of having another coronary event is also of great importance.

Cigarette smokers are at increased risk for fatal and nonfatal heart attacks and for sudden death. Smokers have a 70-percent greater coronary heart disease death rate, a twofold to fourfold greater incidence of coronary heart disease, and a twofold to fourfold greater risk for sudden death than nonsmokers.[25] In 1985, smoking was estimated to account for 21 percent of all coronary heart disease deaths and 40 percent of coronary heart disease deaths in people younger than age 65. Prospective epidemiologic studies have documented a substantial reduction in coronary heart disease rates following smoking cessation. While some studies have shown a benefit within 2 years after quitting, other studies have suggested that coronary heart disease risk gradually decreases over a period of several years. Reducing the proportion of youth who start to smoke and encouraging smoking cessation among current smokers are important preventive measures for reducing coronary heart disease incidence and mortality (see *Tobacco*).

Elevated blood cholesterol levels are associated with a higher incidence of coronary heart disease, and reducing both the mean serum cholesterol level and the proportion of people with high blood cholesterol can have an important impact on morbidity and mortality rates for coronary heart disease. Each 1-percent reduction in serum cholesterol level has been associated with a 2-percent reduction in risk of heart disease death.[13] Evidence from the long-term followup of the Hypertension Detection and Follow-Up Program clinical trial indicates that blood pressure control also can help to reduce mortality from coronary heart disease.[8] For coronary heart disease, the mortality rate in the intensively treated stepped-care group was 16 percent lower than the rate in the referred-care control group. This difference was noted primarily for heart attacks, in which there was a 23-percent reduction in favor of the stepped-care group.

Overweight is a risk factor for high blood pressure, high blood cholesterol, and diabetes, and is an independent risk factor for coronary heart disease. Physical inactivity affects multiple risk factors and also increases coronary heart disease risk. Reducing the proportions of Americans who are overweight and physically inactive can help to reduce coronary heart disease incidence and mortality (see *Nutrition* and *Physical Activity and Fitness*).

Tracking coronary heart disease mortality is complicated by coding changes in the International Classification of Diseases (ICD). Changes from ICDA-8 to ICD-9 (in 1979) and a proposed change from ICD-9 to ICD-10 (to occur in 1995), which alter subcomponents of relevant disease categories, make comparability over time difficult. Although the National Center for Health Statistics has prepared comparability ratios to take changes in disease classification into account, analyses by race and gender are not possible using these ratios. Therefore, this objective uses published[30] and unpublished[29] coronary heart disease mortality data that provide consistency in the classification between ICDA-8 and ICD-9 for the four major race-gender groups in the United States.

The year 2000 target of 100 per 100,000 was chosen on the basis of trend evaluation and expert judgement, and reflects the continuing downward trend in the overall coronary heart disease death rate. Achieving the target would represent a 26-percent reduction in the death rate due to coronary heart disease between 1987 and the year 2000.

Coronary heart disease death rates are higher among men than among women and are higher among blacks than among whites. In 1987, the age-adjusted coronary heart disease death rate for black men was 208 per 100,000 compared to 185 per 100,000 for white men. The death rate for black women was 129 per 100,000 compared to 90 per 100,000 for white women.[29] Furthermore, while the coronary heart disease death rate has declined steadily over the past 20 years for white men, the decline has slowed substantially over the past 10 years for black men, black women, and white women.[30] Hence, a special population target has been established to accelerate the decline for blacks and prevent the mortality gap between blacks and whites from widening further.

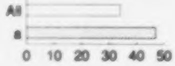
Although national data on coronary heart disease mortality among Hispanics are limited, regional coronary heart disease death rates for Mexican Americans in Los Angeles County and Texas are lower than those for whites for both men and women. Heart disease is the leading cause of death for all Asian and Pacific Islander American groups, but Asian Americans appear to be at a lower risk of mortality from most cardiovascular diseases than whites and other minority groups, with the possible exception of stroke.[28]

Heart disease is a significant contributor to all-cause mortality for American Indians and Alaska Natives but heart disease death rates for this group are lower than rates for the U.S. population overall. In 1983-85, diseases of the heart (of which coronary heart disease is a major part) was the leading cause of death for both American Indians and Alaska Natives, with an overall rate of 110 deaths per 100,000.[9] Among American Indians and Alaska Natives aged 45 through 64, the death rate for heart disease was 238 per 100,000. These data represent American Indians and Alaska Natives residing on or near all 32 Reservation States in which the Indian Health Service has responsibilities. More representative national data focusing on coronary heart disease are currently being gathered.

*This objective also appears as Objective 1.1 in *Physical Activity and Fitness*, as Objective 2.1 in *Nutrition*, and as Objective 3.1 in *Tobacco.*

15.2 Reduce stroke deaths to no more than 20 per 100,000 people. (Age-adjusted baseline: 30.3 per 100,000 in 1987)

Special Population Target

	Stroke Deaths (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
15.2a	**Blacks**	**51.2**	**27**	

Baseline data source: National Vital Statistics System, CDC.

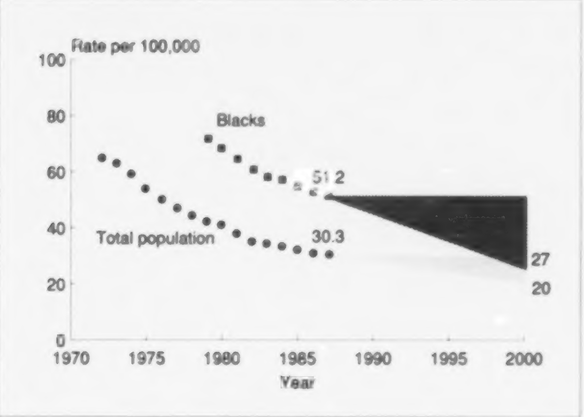


Fig. 15.2

Age-adjusted stroke death rates

Stroke is the third leading cause of death in the United States. It is also a major cause of morbidity with 400,000 to 500,000 Americans suffering nonfatal strokes each year. Stroke mortality has declined by more than 50 percent since 1972.[15] Much of this decline has been attributed to the improved control of high blood pressure. Recent evidence indicates that cigarette smoking is also a risk factor for stroke, and that smoking cessation will reduce stroke risk. Although better access to care and improved treatment regimens can help to decrease stroke mortality, improved treatment and control of high blood pressure and smoking cessation continue to play an important role in reducing stroke incidence, disability, and mortality.[22]

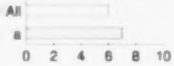
The year 2000 target of 20 per 100,000 was derived through the consensus of expert physicians, public health professionals, and epidemiologists. If achieved, the rate of 20 per 100,000 would represent a 34-percent reduction in the stroke death rate between 1987 and the year 2000.

Stroke mortality is considerably higher for blacks than whites. In 1987, the age-adjusted death rates for black men and women were 57.1 and 46.7 per 100,000, respectively, compared to 30.3 and 26.3 for white men and women. To help narrow this gap, a special population target proposing a greater proportional reduction in stroke deaths has been established for blacks. If achieved, this would represent a 47-percent reduction in the age-adjusted stroke mortality rate for blacks between 1987 and 2000. Special efforts also need to be focused in areas such as the southeastern United States (the Stroke Belt), where stroke death rates for both blacks and whites are higher than in other parts of the country.

Although reliable national data are not available, stroke death rates among Chinese, Japanese, Koreans, and Filipinos in the United States do not appear to be elevated compared to the rates for U.S. blacks and whites.[32] There also does not appear to be excess stroke mortality among Hispanics compared to whites in southern Texas. Stroke mortality may be slightly higher among Puerto Ricans in New York, especially in the younger age groups, compared to whites.[28] Stroke death rates among American Indians and Alaska Natives do not appear to be higher than the rates for the U.S. population as a whole.[9]

15.3 Reverse the increase in end-stage renal disease (requiring maintenance dialysis or transplantation) to attain an incidence of no more than 13 per 100,000. (Baseline: 13.9 per 100,000 in 1987)

Special Population Target

	ESRD Incidence (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
15.3a	**Blacks**	**32.4**	**30**	

Baseline data source: Program Management and Medical Information System, Health Care Financing Administration.

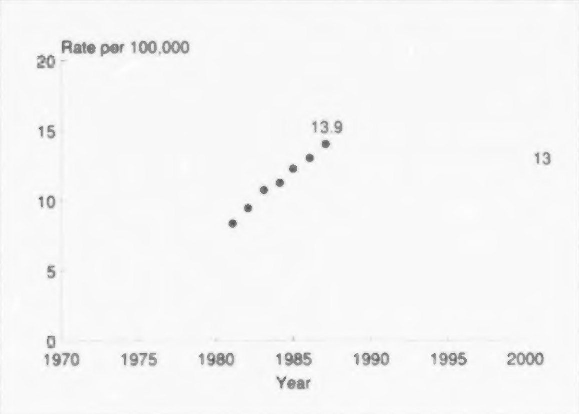


Fig. 15.3

Medicare ESRD program incidence rate

End-stage renal disease (ESRD) or progressive chronic kidney failure is a serious complication of both hypertension and diabetes. In 1987, 30 percent of new chronic kidney failure cases were attributed to diabetes, 26 percent were attributed to hypertension, 19 percent were attributed to glomerulonephritis, 13 percent were from other causes, and 12 percent were of unknown origin. The predominance of ESRD from hypertension and diabetes is greatest in the southern and southeastern States. (See also Objective 17.10 in *Diabetes and Chronic Disabling Conditions.*)

Progressive chronic kidney failure secondary to primary hypertension or diabetes mellitus may be slowed by lowering high blood pressure.[12] It also seems likely that early treatment to lower blood pressure levels and more aggressive control of blood pressure and diabetes may salvage some kidney tissue.[26]

People with ESRD requiring maintenance dialysis or kidney transplantation for survival are eligible for the Medicare ESRD program. Newly treated ESRD patients covered by Medicare represent approximately 93 percent of the universe of treated patients. Thus, program incidence data from the Health Care Financing Administration provide a reasonable estimate of ESRD incidence rates in the population.

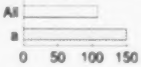
ESRD program incidence rates attributed to hypertension are substantially higher among blacks than whites. Overall, during 1983-86, blacks had a rate of renal failure attributed to hypertension of 10.5 per 100,000, almost six times that for whites. The greatest differential was among people aged 24 through 44, where the rate of 8.9 per 100,000 for blacks was 18 times as great as the rate for whites of 0.5 per 100,000. ESRD program incidence rates attributed to diabetes are also much higher among blacks than whites.[3] (See Objective 17.10 in *Diabetes and Chronic Disabling Conditions.*)

Since 1981, ESRD program incidence has increased steadily. This may be due in part to improved diagnostic capabilities, better access for patients, and increased medical reimbursement for dialysis, as well as improved reporting of ESRD. The target of an ESRD program incidence of 13 per 100,000 by the year 2000 represents a reversal of the increasing trend and a 6-percent reduction from the 1987 level of 13.9 per 100,000. While this target may appear ambitious, it is believed to be reasonable based on the review and analysis of experts and practicing clinicians. With a collective effort, this goal can be met.

Risk Reduction Objectives

15.4 Increase to at least 50 percent the proportion of people with high blood pressure whose blood pressure is under control. (Baseline: 11 percent controlled among people aged 18 through 74 in 1976-80; an estimated 24 percent for people aged 18 and older in 1982-84)

Special Population Target

	High Blood Pressure Control	*1976-80 Baseline*	*1982-84 Baseline*	*2000 Target*	*Percent Change*
15.4a	**Men with high blood pressure**	**6%**	**16%**	**40%**	

Note: People with high blood pressure have blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or take antihypertensive medication. Blood pressure control is defined as maintaining a blood pressure less than 140 mm Hg systolic and 90 mm Hg diastolic. In NHANES II and the Seven States Study, control of hypertension did not include nonpharmacologic treatment. In NHANES III, those controlling their high blood pressure without medication (e.g., through weight loss, low sodium diets, or restriction of alcohol) will be included.

Baseline data sources: 1976-80 National Health and Nutrition Examination Survey (NHANES II), CDC; 1982-84 Seven States Study (represents the medians of data from California, Colorado, Georgia, Maine, Maryland, Michigan, and South Carolina), NIH.

Long-term blood pressure control can help to reduce the incidence of and death caused by cardiovascular diseases such as coronary heart disease, hypertensive heart disease, and stroke. Although the last nationally representative survey in 1976-80 showed that only 11 percent of hypertensive adults were under control, the Seven States Study showed a larger percentage under control (24 percent) in 1982-84. In 1987, 35 percent of hypertensive adults in South Carolina were maintaining blood pressure control. These data suggest a progressive increase in the percentage of hypertensives under control.

In keeping with this gradual increase, a year 2000 target of 50 percent was recommended by the experts of the Long Range Planning Committee of the National High Blood Pressure Education Program. At first glance, the year 2000 objective for blood pressure control appears to set a lower target level than its 1990 predecessor (50 percent in 2000 versus 60 percent in 1990), but the 1990 objective reflected a definition of high blood pressure as 160/95 mm Hg or higher and/or taking antihypertensive medication.

Because control of hypertension appears to be a greater problem for men than for women in the black, white, and Hispanic populations, a special population target has been established for hypertensive men. Although the target of 40 percent is lower than the overall target, it represents proportionately greater change.

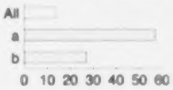
Achieving long-term blood pressure control requires not only that individuals with high blood pressure enter treatment but that they remain in treatment and adhere to a combination of pharmacologic and nonpharmacologic therapies (see Objective 15.5). Under conditions of common medical practice, poor compliance with medical recommendations greatly undermines the effectiveness of care. As many as 50 percent of those with high blood pressure drop out of treatment within the first year.[6] Only two-thirds of those who stay under care take enough of their prescribed medication to achieve adequate blood pressure reduction. Success in complying with diet modification and weight loss recommendations is lower still.

Research has identified a number of strategies for improving appointment keeping, medication compliance, and adherence to lifestyle change recommendations. Reviews of these studies have been published[6,7] and a variety of materials have been developed to assist primary care providers in applying this knowledge to practice.[19]

As health care providers and health educators encourage blood pressure control in their clinics and educational programs, they should consider such issues as access to care, cost of care, patient support systems, adequate tracking systems, and patient comprehension of the severity of hypertension, as well as the latest research on improving patient compliance. Special efforts regarding education, followup, and more accessible care for hypertensive men are needed as men are less likely to seek and follow health care recommendations than women. The worksite proves to be a good avenue for reaching this group and is one of several ways to screen, monitor, and treat high blood pressure (see Objective 15.16). Efforts among Hispanic, black, and other minority group men must be culturally appropriate to make an impact among these groups.

15.5 Increase to at least 90 percent the proportion of people with high blood pressure who are taking action to help control their blood pressure. (Baseline: 79 percent of aware hypertensives aged 18 and older were taking action to control their blood pressure in 1985)

Special Population Targets

	Taking Action to Control Blood Pressure	*1985 Baseline*	*2000 Target*	*Percent Increase*
15.5a	**White hypertensive men aged 18-34**	**51%**†	**80%**	
15.5b	**Black hypertensive men aged 18-34**	**63%**†	**80%**	
	†*Baseline for aware hypertensive men*			

Note: High blood pressure is defined as blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or taking antihypertensive medication. Actions to control blood pressure include taking medication, dieting to lose weight, cutting down on salt, and exercising.

Baseline data source: National Health Interview Survey, CDC.

A prerequisite of hypertension treatment and control is awareness of the problem. But awareness must be followed by appropriate management. Screening and education are needed to find people who are not aware of their hypertension, assist them in adopting or changing critical behaviors, and help them achieve blood pressure control. Health care providers and health educators in a variety of settings and organizations can play an important role in increasing hypertension awareness, treatment, and control.

Blood pressure control may be achieved through weight loss, reduction of alcohol intake, sodium restriction, and/or medication.[22] Regular physical activity, biofeedback, and relaxation techniques may also be helpful in achieving blood pressure control.[22] Health professionals should be aware of and encourage the use of such treatment modalities. *Nutrition* and *Physical Activity and Fitness* provide further guidance regarding the control of high blood pressure.

In 1976-80, based on a threshold of 160/95 mm Hg, 74 percent of all hypertensives were aware of their condition and 56 percent were taking medication to control it. In 1985, among aware hypertensives, 79 percent were taking action to control their blood pressure. An estimated 65 percent were cutting down on salt, 32 percent were dieting to lose weight, and 29 percent were exercising to control their high blood pressure. Although National Health Interview Survey data are limited to aware hypertensives, the third National Health and Nutrition Examination Survey (NHANES III) will provide data on the extent to which all people with high blood pressure are engaging in a variety of behaviors critical to long-term blood pressure control.

Since data show that young hypertensive men are the least likely group to take steps to control their blood pressure, special population targets have been set for white and black men aged 18 through 34. Data are not available for other minority groups such as Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives. However, overall data on awareness of high blood pressure among selected minority groups show that awareness levels are essentially the same for whites, blacks, and Hispanics. State-specific data from California suggest that awareness of high blood pressure among hypertensives may be lower among Asians and Pacific Islanders than for the total population.[32] Special efforts should be initiated to increase high blood pressure detection and awareness among this group.

15.6 Reduce the mean serum cholesterol level among adults to no more than 200 mg/dL. (Baseline: 213 mg/dL among people aged 20 through 74 in 1976-80, 211 mg/dL for men and 215 mg/dL for women)

Baseline data source: National Health and Nutrition Examination Survey (NHANES), CDC.

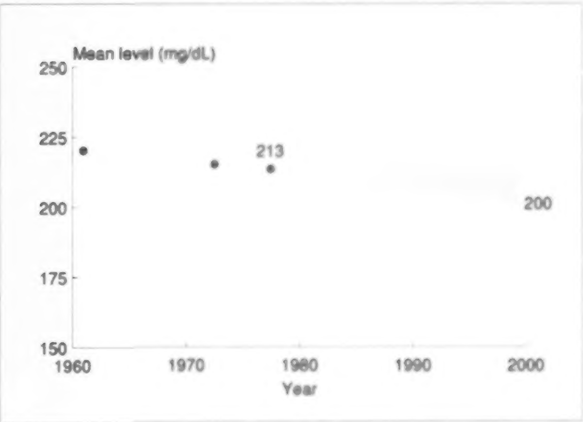


Fig. 15.6

Mean serum cholesterol level among people aged 20 through 74

This objective, although similar to Objective 15.7, addresses cholesterol levels in the entire population, including people with moderately elevated levels as well as those with high levels. This objective gives some indication as to the overall coronary heart disease risk in the population as it relates to blood cholesterol.

Mean serum cholesterol levels for the U.S. population have been declining. Values determined in 1960-62 showed men and women with average levels of 217 and 223 mg/dL, respectively. By 1976-80, mean serum cholesterol levels for men and women had decreased to 211 and 215 mg/dL, respectively. The year 2000 target of 200 mg/dL represents an acceleration of this downward trend but should be attainable given the public's growing awareness of the relationship between diet, blood cholesterol, and heart disease, and the reported changes in cholesterol detection and management behavior.

No significant difference in cholesterol levels between blacks and whites has been found, and Hispanics tend to have even lower cholesterol levels than the total population. In 1976-80, black males and black females aged 20 through 74 had mean serum cholesterol levels of 208 and 212 mg/dL, respectively. In 1982-84, Mexican American males and females were found to have mean serum cholesterol levels of 203 and 202 mg/dL, respectively. Cubans and Puerto Ricans had similar levels. Strategies focused specifically on these minority groups must be continued to ensure that their mean serum cholesterol levels will continue to decline with those of the overall adult population.

Educational efforts to attain this objective must focus on the population at large to encourage people to know their cholesterol number, to make dietary changes as appropriate, and, for those needing medical supervision, to initiate diet and, if necessary, drug treatment. In 1986, only 16 percent of people knew that a desirable blood cholesterol level was "about 200."[18] In 1988, only 56 percent of people aged 18 and older knew that saturated fat raises blood cholesterol, and only 65 percent knew the major sources of saturated fat in the diet.[4]

15.7 Reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater to no more than 20 percent among adults. (Baseline: 27 percent for people aged 20 through 74 in 1976-80, 29 percent for women and 25 percent for men)

Baseline data source: National Health and Nutrition Examination Survey (NHANES), CDC.

This objective addresses the detection of high blood cholesterol and its reduction through diet and, if necessary, drug treatment. Because blood cholesterol levels greater than or equal to 240 mg/dL are associated with a substantially higher incidence of coronary heart disease, reducing the prevalence of high blood cholesterol among adults will help decrease the risk for coronary heart disease.

In clinical practice, the determination of high blood cholesterol should be made according to the Adult Treatment Panel guidelines published in the *Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults.*[21] These guidelines classify individuals based on their total cholesterol and low-density-lipoprotein (LDL) cholesterol. If total cholesterol is high (240 mg/dL or above) or if total cholesterol is borderline high (200-239 mg/dL) and the individual has coronary heart disease or at least two other coronary heart disease risk factors, then lipoproteins are measured and LDL-cholesterol is calculated (based on total cholesterol, high-density-lipoprotein or HDL-cholesterol, and triglycerides). Final treatment decisions are based on LDL-cholesterol. According to the Adult Treatment Panel's LDL-cholesterol classification, about 36 percent of U.S. adults have high blood cholesterol.

This objective, however, is based on total cholesterol, which is easier to measure and which provides a solid basis for tracking national objectives. Considering only total cholesterol levels of 240 or greater yields a baseline prevalence estimate for high blood cholesterol of 27 percent.

The prevalence of high blood cholesterol among blacks and Hispanics is lower than the prevalence overall. In 1976-80, 24 percent of black men and 24 percent of black women aged 20 through 74 had blood cholesterol levels of 240 mg/dL or greater. In 1982-84, 17 percent of Mexican American men and women had levels of blood cholesterol equal to or greater than 240 mg/dL. Comparable percentages were found for Cubans and Puerto Ricans. Regardless, targeted efforts to all special populations need to be continued so that the percentage of people with blood cholesterol levels equal to or greater than 240 mg/dL in these groups will likewise decline and thus continue to be comparable to the percentage found in the overall population.

15.8 Increase to at least 60 percent the proportion of adults with high blood cholesterol who are aware of their condition and are taking action to reduce their blood cholesterol to recommended levels. (Baseline: 11 percent of all people aged 18 and older, and thus an estimated 30 percent of people with high blood cholesterol, were aware that their blood cholesterol level was high in 1988)

Note: "High blood cholesterol" means a level that requires diet and, if necessary, drug treatment. Actions to control high blood cholesterol include keeping medical appointments, making recommended dietary changes (e.g., reducing saturated fat, total fat, and dietary cholesterol), and, if necessary, taking prescribed medication.

Baseline data source: Health and Diet Survey, FDA.

This objective focuses on the interaction between patient and health care provider and addresses whether patients are informed when their cholesterol level is high and are taught ways to reduce it. It also addresses the patient's role in adopting new health behaviors after being advised to do so.

The health professional must know what is classified as high and how to communicate this to the patient effectively. Once individuals have been screened, they must not only understand what their "number" means, they must also be able to take action to achieve and maintain a recommended cholesterol level, whether it be through dietary treatment or, if necessary, drug therapy.

Currently available baseline data do not measure this objective directly. Baseline data from the Health and Diet Survey represent the percentage of the total population who were told their cholesterol is high, whereas the objective refers to the percentage of people who actually have high blood cholesterol who were told that they had high blood cholesterol. Since adults needing treatment for high blood cholesterol represent about 36 percent of the entire adult population, it can be estimated that about 30 percent of adults with high blood cholesterol are aware of their condition. NHANES III will be able to measure this objective directly.

15.9* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

Baseline data sources: 1976-80 National Health and Nutrition Examination Survey (NHANES II), CDC; 1985 Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

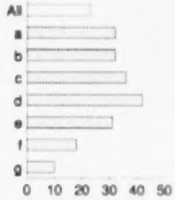
*For commentary, see Objective 2.5 in *Nutrition*. This objective also appears as Objective 16.7 in *Cancer*.

15.10* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
15.10a	**Low-income women aged 20 and older**	**37%**	**25%**
15.10b	**Black women aged 20 and older**	**44%**	**30%**
15.10c	**Hispanic women aged 20 and older**		**25%**
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
15.10d	**American Indians/Alaska Natives**	**29-75%**[§]	**30%**
15.10e	**People with disabilities**	**36%**[+]	**25%**
15.10f	**Women with high blood pressure**	**50%**	**41%**
15.10g	**Men with high blood pressure**	**39%**	**35%**

Percent Decrease



[†] *Baseline for people aged 20-74*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation.[33] *BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.*

Baseline data sources: National Health and Nutrition Examination Survey (NHANES), CDC; Hispanic Health and Nutrition Examination Survey, CDC; Indian Health Service; for people with disabilities, National Health Interview Survey, CDC.

*For commentary, see Objective 2.3 in *Nutrition*. This objective also appears as Objective 1.2 in *Physical Activity and Fitness* and as Objective 17.12 in *Diabetes and Chronic Disabling Conditions*.

15.11* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

Baseline data source: Behavioral Risk Factor Surveillance System, CDC.

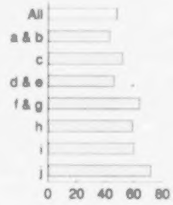
*For commentary, see Objective in 1.3 in *Physical Activity and Fitness.* This Objective also appears as Objective 17.13 in *Diabetes and Chronic Disabling Conditions.*

15.12* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
15.12a	**People with a high school education or less aged 20 and older**	**34%**	**20%**
15.12b	**Blue-collar workers aged 20 and older**	**36%**	**20%**
15.12c	**Military personnel**	**42%**[†]	**20%**
15.12d	**Blacks aged 20 and older**	**34%**	**18%**
15.12e	**Hispanics aged 20 and older**	**33%**[‡]	**18%**
15.12f	**American Indians/Alaska Natives**	**42-70%**[§]	**20%**
15.12g	**Southeast Asian men**	**55%**[+]	**20%**
15.12h	**Women of reproductive age**	**29%**[††]	**12%**
15.12i	**Pregnant women**	**25%**[‡‡]	**10%**
15.12j	**Women who use oral contraceptives**	**36%**[§§]	**10%**

Percent Decrease



[†] *1988 baseline*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1979-87 estimates for different tribes*

[+] *1984-88 baseline*

[††] *Baseline for women aged 18-44*

[‡‡] *1985 baseline*

[§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

Baseline data sources: National Health Interview Survey, CDC; Worldwide Survey of Substance Abuse and Health Behavior Among Military Personnel, U.S. Department of Defense; Hispanic Health and Nutrition Examination Survey, CDC; for American Indians and Alaska Natives, CDC 1987; for Southeast Asian men, local surveys[10,11,27]; for women who use contraceptives, Behavioral Risk Factor Surveillance System, CDC.[5]

*For commentary, see Objective 3.4 in *Tobacco.* This objective also appears as Objective 16.6 in *Cancer.*

Services and Protection Objectives

15.13 Increase to at least 90 percent the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high. (Baseline: 61 percent of people aged 18 and older had their blood pressure measured within the preceding 2 years and were given the systolic and diastolic values in 1985)

Note: A blood pressure measurement within the preceding 2 years refers to a measurement by a health professional or other trained observer.

Baseline data source: National Health Interview Survey, CDC.

To reduce the risk of cardiovascular disease among the total population, all adults should be aware of their blood pressure level, whether it be high or normal. Almost all adults (99 percent) have had their blood pressure checked at least once, but blood pressure needs to be checked on a regular basis. It is equally important that people be able to interpret the meaning of their blood pressure readings. This knowledge can help to encourage appropriate blood pressure management.

In 1974, an estimated 47 percent of the adult population reported their blood pressure to be high, normal, or other based on a reading within the preceding year; 21 percent had not been told; and 32 percent had not had their blood pressure taken. In 1985, an estimated 74 percent of people aged 18 and older had their blood pressure taken by a physician or other health professional within the preceding year and 88 percent had their blood pressure checked within the preceding 24 months. Of those whose blood pressure was measured within 24 months, 68 percent (or approximately 61 percent of the total population) were given the values of both systolic and diastolic pressure. The target of 90 percent set for this objective is believed attainable given the many opportunities for blood pressure measurement and education in community and clinical settings.

15.14 Increase to at least 75 percent the proportion of adults who have had their blood cholesterol checked within the preceding 5 years. (Baseline: 59 percent of people aged 18 and older had "ever" had their cholesterol checked in 1988; 52 percent were checked "within the preceding 2 years" in 1988)

Baseline data source: Health and Diet Survey, FDA.

Blood cholesterol measurement not only identifies individuals in need of treatment for high blood cholesterol, it also provides an opportunity to educate and recommend lifestyle changes to reduce the risk of coronary heart disease. The proportion of individuals who have had their cholesterol levels checked should increase as accurate detection and screening practices permeate the health care system and more and more individuals are reached through community programs.

Data suggest that an increase is already occurring. In 1983, only 35 percent of people aged 18 and older had ever had their cholesterol checked.[16] By 1986, this had risen to 46 percent.[18] In 1988, 59 percent of people aged 18 and older reported having had their cholesterol checked.[4]

Although these data reflect those who have ever had their blood cholesterol checked, the objective reflects current recommendations that blood cholesterol be measured at least once every 5 years. The 1988 Health and Diet Survey found that 52 percent of adults had their cholesterol checked within the preceding 2 years, and that roughly 90 percent of adults who ever had their cholesterol checked had it checked within the preceding 2 years.[4]

In 1987, blacks and Hispanics were considerably less likely to have ever had their cholesterol checked.[1] Only 35 percent of Hispanics and 39 percent of blacks had ever had their cholesterol checked in 1987 compared to 59 percent for the overall population in 1988. Given the high death rate for coronary heart disease among blacks, efforts to reduce detection disparities are especially important for this group. Culturally appropriate detection programs and intervention strategies targeted to blacks, Hispanics, and other minorities should be a high priority.

Although an increasing proportion of people have had their cholesterol level checked, only 17 percent of people aged 18 and older reported that they knew their cholesterol level in 1988.[4] Knowledge of one's cholesterol level is of primary importance because that knowledge can motivate one toward appropriate action, whether it be periodic monitoring, changes in diet, or, if necessary, following prescribed drug treatment. The public education strategy, "Know Your Number," should be continued by many organizations to help motivate individuals to action. Information about the importance of having one's cholesterol checked and then taking appropriate action should come from a variety of sources including health professionals, mass media campaigns, and public education programs.

15.15 Increase to at least 75 percent the proportion of primary care providers who initiate diet and, if necessary, drug therapy at levels of blood cholesterol consistent with current management guidelines for patients with high blood cholesterol. (Baseline data available in 1991)

Note: Current treatment recommendations are outlined in detail in the Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, released by the National Cholesterol Education Program in 1987.[21] *Guidelines appropriate for children are currently being established. Treatment recommendations are likely to be refined over time. Thus, for the year 2000, "current" means whatever recommendations are then in effect.*

This objective addresses the extent to which treatment recommendations for high blood cholesterol are understood and implemented by primary care providers. Treatment recommendations are unlikely to be implemented unless primary care providers know when to initiate diet and, if necessary, drug therapy for high blood cholesterol. If proper guidelines are followed by health professionals, more patients can be expected to make dietary changes and reduce their blood cholesterol to desirable levels.

Although current treatment recommendations require lipoprotein analysis to determine low-density lipoprotein levels, the only baseline data available are for decisions based on total cholesterol levels. A target of 75 percent was set upon the recommendation of experts serving on the Coordinating Committee of the National Cholesterol Education Program after careful review of comparable data from the 1983 and 1986 Cholesterol Awareness Survey, which were collected prior to the release of the *Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults*. While the target may appear ambitious, it reflects a continuing trend of expanded education and practice changes on the part of clinicians in high blood cholesterol treatment and management.

Following proper treatment guidelines and counseling patients appropriately is especially important when clients are already at risk for coronary heart disease because of a positive family history or other risk factors such as cigarette smoking and high blood pressure. These individuals could also benefit from a discussion of the early warning signs of a heart attack or stroke to enable them to seek medical treatment as early as possible, take advantage of the many treatment options currently available, and reduce their risk of death due to cardiovascular disease.

15.16 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer high blood pressure and/or cholesterol education and control activities to their employees. (Baseline: 16.5 percent offered high blood pressure activities and 16.8 percent offered nutrition education activities in 1985)

Baseline data source: National Survey of Worksite Health Promotion Activities, ODPHP.

The worksite is a valuable place to offer blood pressure and blood cholesterol screening, education, referral, and control activities. Worksite programs provide a mechanism for reaching large numbers of adults. Typical activities include special events, group classes or workshops, and onsite/offsite treatment and followup. Optimally, blood pressure and cholesterol education and control programs at the worksite should be part of a comprehensive health promotion program (see Objective 10.12 in *Occupational Safety and Health* and Objectives 8.6 and 8.7 in *Educational and Community-Based Programs*). Barriers that may limit the achievement of this objective include cost to the companies, lack of perceived benefit, lack of staff, concerns about confidentiality, and requirement of blood acquisition for cholesterol screening.

15.17 Increase to at least 90 percent the proportion of clinical laboratories that meet the recommended accuracy standard for cholesterol measurement. (Baseline: 53 percent in 1985)

Baseline data source: College of American Pathologists' Comprehensive Chemistry Study.

Accurate and precise cholesterol measurement is essential for an effective national detection and treatment strategy. Most clinical laboratories are currently achieving acceptable precision, but accuracy is not as good.[20] Because accuracy is in part a function of precision and the major problem is inaccuracy, this objective focuses on improvement in accuracy. In 1985, 53 percent of surveyed laboratories using enzymatic methods met the current accuracy standard of ±5 percent. But the Laboratory Standardization Panel has recommended that, by 1992, laboratories should achieve a bias of less than or equal to ±3 percent.[20] The objective of having 90 percent of laboratories meet this more stringent standard is ambitious but is believed attainable.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the heart disease and stroke objectives over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the heart disease, stroke, high blood pressure, and high blood cholesterol objectives.
- Provide sufficient, appropriate curricular content in cardiovascular disease prevention, including high blood pressure and high blood cholesterol detection and control, in all schools and programs preparing students for careers in the health professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on cardiovascular disease prevention, including high blood pressure and high blood cholesterol detection and control, by national professional associations whose members have roles in promoting cardiovascular health.
- Increase the proportion of teachers who promote cardiovascular disease prevention strategies such as smoking cessation, proper nutrition, physical activity, and early screening for other coronary heart disease risk factors such as high blood cholesterol and high blood pressure.
- Increase the proportion of physicians and other health care professionals who counsel patients, especially high risk patients, to respond immediately and appropriately at the first evidence of a heart attack.

Surveillance And Data Needs

Availability of Future Data

Annual data from existing data sources are available to track Objectives 15.1, 15.2, and 15.3.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 15.10, 15.11, 15.12, 15.13, 15.14, and 15.15.

New surveillance systems are needed to track Objectives 15.16 and 15.17.

High Priority Needs

Specific data are needed to assess progress toward each of the heart disease and stroke objectives, both in the total population and for each minority group, with emphasis on those who have limited access to the medical care system. High priority data and surveillance needs include the following:

Heart Disease

- Monitor the number of deaths related to coronary heart disease, both in the total population and in racial and ethnic minority groups.
- Monitor the number of individuals who can state the major modifiable risk factors for cardiovascular disease (i.e., high blood pressure, high blood cholesterol, smoking, and obesity).
- Monitor the number of physicians and other health care professionals who counsel patients about responding immediately and appropriately at the first evidence of a heart attack.
- Monitor the number of adult Americans who recognize the signs and symptoms of an impending heart attack and who understand how to mobilize immediate treatment.

Blood Cholesterol

- Monitor cholesterol levels and the prevalence of high blood cholesterol in the total population and in racial and ethnic minority groups.
- Monitor the proportion of all adults who have had their cholesterol levels checked, know what their cholesterol level is, and know what level is appropriate.
- Monitor diet knowledge and behavior as it relates to cholesterol and saturated fats.
- Monitor health professionals to determine if they initiate diet and, if necessary, drug therapy at recommended levels and if they communicate cholesterol information clearly and effectively.
- Monitor the accuracy and safety with which cholesterol levels are both obtained and determined, whether in the laboratory, clinic, or community setting.
- Monitor the number of worksites and other community settings in which cholesterol screening and education is provided.
- Monitor the distribution of cholesterol levels in children.

Blood Pressure

- Monitor the stroke death rate with special emphasis on individuals residing the Stroke Belt (southeastern States).
- Monitor the program incidence of end-stage renal disease requiring maintenance dialysis or transplantation.
- Monitor the proportion of people with high blood pressure.
- Monitor the proportion of hypertensive individuals in minority groups and the total population who keep their blood pressure under control.
- Monitor the number of worksites and other community settings in which high blood pressure screening and education is provided.

Research Needs

Blood Pressure

- Develop methods of primary prevention of high blood pressure at all ages. Studies should compare the most promising nonpharmacologic interventions, such as weight reduction, physical activity, sodium reduction, and alcohol restriction and should explore other promising modalities, such as supplementation of the diet with potassium, magnesium, calcium, fish oils, and other promising dietary approaches. The effectiveness of preventive approaches in various minorities should be determined so as to determine potential differences in responsiveness.
- Develop techniques of primary prevention and management of high blood pressure (including isolated systolic hypertension) in older adults, more than half of whom may develop hypertension.
- Identify primary prevention strategies that might have public health and public education applications. Specifically, educational and behavioral interventions that might be applied in schools, through media, and in community programs should be developed and tested.
- Identify and elaborate genetic predisposition to development of high blood pressure and the necessary environmental interactions with genetic precursors. This will assist in identifying those at greatest risk before elevated blood pressure develops and in selecting focused preventive and therapeutic approaches whether pharmacologic or nonpharmacologic.
- Determine the relationships at the individual and population levels among obesity, serum insulin levels, blood pressure, and serum lipid levels and how these relationships might differ by racial or ethnic group.
- Investigate the less than expected decrease in coronary heart disease deaths when drug treatment lowers blood pressure to appropriate ranges. Inquiry and trials will be required related to differences among drugs in effecting this decrease in coronary heart disease and the potential of concomitant therapy to decrease serum lipids.
- Determine the cause of and treatment for hypertension associated with pregnancy.

- Determine the effectiveness of nonpharmacologic approaches to treatment of mild to moderate hypertension, both as the sole therapy and as adjuncts to pharmacologic therapy. Differential responsiveness to various nonpharmacologic modalities should be sought among minority groups.
- Clinically assess the impact of lowering blood pressure on preventing and managing end-stage renal disease and the choice of therapies.

Blood Cholesterol

- Define more quantitatively the risk attributable to various lipid measures (total serum cholesterol, HDL-cholesterol, etc.) for coronary heart disease morbidity and mortality in women and older adults (aged 65 and older).
- Determine more quantitatively the effectiveness of dietary change on serum lipids in free-living populations and on subsequent clinical cardiovascular events.
- Clarify whether there is a risk associated with low serum cholesterol levels (less than 160 mg/dL), especially for older adults.
- Clarify the interrelationships among dietary fats (including fish oils), serum lipids, and measure of hemostasis and thrombosis.
- Determine the safety, effectiveness, and most appropriate balance of estrogen/progestin therapy to prevent cardiovascular disease in postmenopausal women.
- Define the genetic and environmental mechanisms by which several risk factors (abnormal glucose tolerance, central obesity, hypertension, dyslipidemia) are coincident in individuals and the degree to which these coincident factors may differ among different racial and ethnic groups.
- Develop and demonstrate effective school-based intervention programs directed toward promoting healthy lifestyles including dietary intake, obesity, and physical activity levels.
- Demonstrate the effect of lipid lowering using pharmacologic or nonpharmacologic approaches on progression and regression of atherosclerotic lesions.
- Develop new low-saturated fat foods through genetic and environmental alterations in food production and through changes in food processing and assess changes in serum cholesterol when these products are introduced.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.4 Vigorous physical activity
1.5 Sedentary lifestyle
1.10 Worksite fitness programs
1.11 Community fitness facilities
1.12 Clinician counseling about physical activity

Nutrition

2.6 Daily intake of vegetables, fruits, and grain products
2.7 Weight loss practices
2.9 Salt and sodium intake
2.14 Nutrition labeling
2.15 Availability of reduced-fat processed foods
2.16 Low-fat, low-calorie restaurant food choices
2.17 Nutritious school and child care food services
2.19 Nutrition education in schools
2.20 Worksite nutrition/weight management programs
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.5 Smoking initiation by youth
3.6 Smoking cessation attempts
3.10 Tobacco-use prevention education and tobacco-free schools
3.11 Worksite smoking policies
3.12 Clean indoor air laws

3.13 Tobacco product sale and distribution to youth
3.14 State plans to reduce tobacco use
3.15 Tobacco product advertising and promotion to youth
3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.8 Alcohol consumption

Educational and Community-Based Programs

8.4 Quality school health education
8.6 Worksite health promotion activities
8.8 Health promotion programs for older adults
8.10 Community health promotion programs

Occupational Safety and Health

10.12 Worksite health and safety programs

Cancer

16.10 Tobacco, diet, and cancer screening counseling by clinicians

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.9 Diabetes-related deaths
17.10 Diabetes-related complications
17.11 Diabetes incidence and prevalence
17.14 Patient education for chronic and disabling conditions

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

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Cancer

16

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16. Cancer

Introduction

Cancer accounts for one out of every five deaths in the United States.[2] It is not one disease, but a constellation of more than 100 different diseases, each characterized by the uncontrolled growth and spread of abnormal cells. Cancer may strike at any age, though it does so more frequently with advancing age. Research has demonstrated that many cancers can be prevented or, if detected and treated at early stages, cured.

Overall costs for cancer in 1985 totaled $72.5 billion, of which $18.1 billion went for direct medical costs, $7.2 billion for morbidity costs (cost of lost productivity), and $47.2 billion for mortality costs. Cancer is responsible for 11 percent of the total cost of disease in the United States. Furthermore, it accounts for 18 percent of the total cost of premature death.[26]

An estimated 1,040,000 new cancer cases (excluding nonmelanoma skin cancer and cancer in situ) will occur in 1990.[2] Trends from 1973 through 1985 indicate that the age-adjusted incidence rate for all cancer sites combined has increased, with a more rapid increase for blacks than whites and a greater increase for men than women.[47] About 75 million, or one in three Americans now living, will eventually have cancer.

Average survival time for people with cancer is also increasing. Of those who develop cancer in 1990, 5 in 10 will be alive in 5 years.[45] The prospect of surviving with a diagnosis of cancer is not the same for all people, however. The 5-year relative survival rate for all cancer sites combined is 50 percent for white patients and 37 percent for black patients. Racial differences in survival can be partially explained by socioeconomic factors, which may be related to patient access to and use of health care early in the disease or access to state-of-the-art treatment.

For all groups younger than age 55, the death rate from all cancers declined between 1973 and 1987.[58] For people aged 45 through 54, the death rates decreased by 6 percent for white men, 5 percent for black men, 6 percent for white women, and 8 percent for black women. The largest decrease in death rate—36 percent—was for children aged 14 and younger. For people aged 55 and older, the cancer death rate increased.

The potential for reducing cancer incidence and mortality through prevention and early detection strategies appears to be large. More than 30 percent of cancer deaths are due to cigarette smoking, a cause that can be eliminated through prevention and control efforts (see *Tobacco*). Early detection and intervention can significantly reduce cancer mortality for some cancers. Studies have demonstrated that screening mammography and clinical breast examination are effective in reducing breast cancer mortality.[64,66,69] Use of the Pap test to screen for cervical cancer greatly reduces the risk of mortality from invasive cervical cancer.[29] Other procedures for the early detection of cancer such as fecal occult blood testing, sigmoidoscopy, and oral, skin, and digital rectal examinations may also have potential for reducing cancer mortality.[45] Though corroborative intervention data are not yet available, it is estimated from cross-cultural and epidemiologic studies that approximately 35 percent of cancer deaths may be related to diet[15] (see *Nutrition*). A high intake of fat has been associated with cancers of the breast, colon, rectum, and prostate, and possibly pancreas, uterus, and ovary. Conversely, a high intake of fiber-containing foods may be associated with a lower risk for colon and rectal cancers. High alcohol consumption has been associated with cancers of the buccal cavity, pharynx, larynx, esophagus, liver, large bowel, breast, head, and neck.[45]

The year 2000 objectives for this priority area focus on those areas in cancer prevention and detection with the greatest potential for reducing cancer incidence, morbidity, and mortality. The targets include cigarette smoking reduction, dietary change, and improvements in early detection. Strategies to reduce tobacco use and to effect dietary change are described in more detail in *Tobacco* and *Nutrition*. Other issues relevant to cancer prevention, including prevention of hepatitis B and human immunodeficiency virus infection, reduction of cancer risk caused by alcohol use, and occupational and environmental exposures to carcinogens (e.g., asbestos, benzene, radon, ionizing radiation) are addressed by other priority areas. Collectively, these targets provide a framework for expanding and coordinating efforts to effectively apply current knowledge of cancer prevention and detection strategies to the reduction of cancer incidence, morbidity, and mortality in the coming decade.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

16.1* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

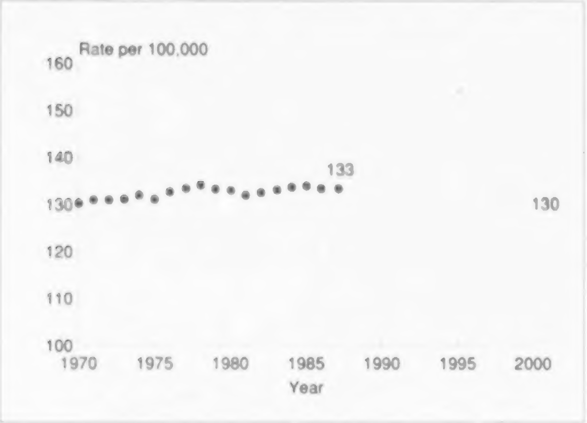


Fig. 16.1

Age-adjusted cancer death rate

Cancer is the second leading cause of death in the United States. In 1990, an estimated 510,000 people will die of cancer.[2] Cancer strikes more frequently with advancing age, but many cancer deaths are premature. In 1987, 18 million years of potential life before age 65 were lost from cancer compared to 15 million years for heart disease.[54]

Although there are many different types of cancer, a few major types account for more than half of all cancer-related illness and death. In 1990, the leading causes of cancer death are: lung cancer (28 percent of all cancer deaths), colorectal cancer (12 percent), breast cancer (9 percent), and prostate cancer (6 percent).[2] For men, the leading causes are lung cancer (35 percent), colorectal cancer (11 percent), and prostate cancer (11 percent). For women, they are lung cancer (21 percent), breast cancer (18 percent), and colorectal cancer (13 percent).

The age-adjusted death rate from cancer has been steadily rising.[54] However, most of the overall increase is due to a rise in lung cancer death rates. Age-adjusted death rates for most other sites are leveling off, and in some cases declining. For all groups younger than age 55, the cancer death rate declined between 1973 and 1987.[58] For people aged 45 through 54, the death rates decreased by 6 percent for white men, 5 percent for black men, 6 percent for white women, and 8 percent for black women. The largest decreases in death rates have been for children aged 14 and younger. For people aged 55 and older, the cancer death rate has been increasing.

For blacks, the age-adjusted cancer death rate is higher than for whites and the average survival time is shorter. In 1987, black males died from cancer at a rate of 288 per 100,000 compared to 158 per 100,000 for white males.[54] For black females, the rate was 132 per 100,000 versus 110 per 100,000 for white females.

Nonmelanoma skin cancer is the most common form of cancer in the United States accounting for about 600,000 new cases annually, roughly one-third of all new cancer cases. In 1990, an additional 1,040,000 people will be diagnosed as having cancer (excluding nonmelanoma skin cancer and carcinoma in situ).[2] The most commonly occurring of these cancers are lung cancer (15 percent), colorectal cancer (15 percent), breast cancer (14 percent), and prostate cancer (10 percent).[2] For men, the most common cancers are prostate cancer (20 percent), lung cancer (20 percent), and colorectal cancer (14 percent). For women, they are breast cancer (28 percent), colorectal cancer (15 percent), and lung cancer (11 percent). If carcinoma in situ were included in these counts, cancer of the uterine cervix would exceed lung cancer in occurrence for women.

Lifestyle, environment, and genetic factors, individually or in combination, can increase an individual's risk of developing cancer. The contribution of lifestyle and environmental factors to cancer mortality has been estimated as follows: diet (approximately 35 percent of cancer deaths), tobacco (30 percent), reproductive/sexual behavior (7 percent), occupation (4 percent), alcohol (3 percent), geophysical factors (3 percent), pollution (2 percent), industrial products (1 percent), and medicines and medical procedures (1 percent).[45] Reductions in tobacco use and dietary modifications to reduce excessive fat consumption and increase consumption of fruits, vegetables, grain products, and therefore dietary fiber, hold the greatest promise as strategies to reduce cancer incidence and ultimately cancer mortality.

In addition, early detection and intervention can significantly reduce cancer mortality for some cancers. Screening mammography and clinical breast examination are effective in reducing breast cancer mortality.[64,66,69] Use of the Pap test to screen for cervical cancer greatly reduces the risk of mortality from invasive cervical cancer.[29] Other procedures for the early detection of cancer such as fecal occult blood testing, sigmoidoscopy, and oral, skin, and digital rectal examinations may also have potential for reducing cancer mortality, especially for high risk individuals.

Thus, both primary prevention and early detection activities can help to reduce cancer death rates, although much of the benefit from primary prevention will not be realized until well after the year 2000. The year 2000 target for this objective was established by summing the site-specific cancer death rate targets established for Objectives 16.2 through 16.5 with a logarithmic projection of the cancer residuals (the overall cancer rate minus the rates for lung, breast, colorectal, and cervical cancer) for 1979 through 1986.

In 1985, the National Cancer Institute estimated that reduction in the cancer mortality rate by as much as 25 to 50 percent was possible by the aggressive application of existing knowledge with respect to smoking, diet, screening for breast and cervical cancers, and application of state-of-the-art cancer treatment as well as advances in the rate at which new cancer treatments were developed.[45] For example, the National Cancer Institute estimated that, in approximate terms, a 50-percent reduction in smoking would yield eventually a nearly 50-percent reduction in the incidence and mortality from lung cancer. These National Cancer Institute estimates emphasized that a reduction in cancer mortality is feasible after significant changes in behavior with respect to smoking, diet, and screening have taken place. The estimates in this chapter reflect gradual changes in behavior and consequently modest changes in cancer mortality rates. The estimates do not reflect future improvements in cancer treatment and application which also will reflect significantly on cancer mortality.

Reductions in cancer incidence achieved through risk factor interventions will reduce cancer morbidity as well as mortality. Screening interventions will have a proportionally greater impact on cancer mortality but will also reduce morbidity. However, the large number of cancer survivors and their longer survival time has resulted in the growth of cancer morbidity as a public health problem, encompassing such diverse issues as rehabilitation, long-term care, pain, employment, insurance, and psychosocial support. Informed, sensitive health professionals, supportive families, and self-help or mutual aid groups all have important roles to play in ameliorating cancer morbidity.

*This objective also appears as Objective 2.2 in *Nutrition*.

**16.2*	Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)**

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

*For commentary, see Objective 3.2 in *Tobacco.*

**16.3	Reduce breast cancer deaths to no more than 20.6 per 100,000 women. (Age-adjusted baseline: 22.9 per 100,000 in 1987)**

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 27.2 and 25.2 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

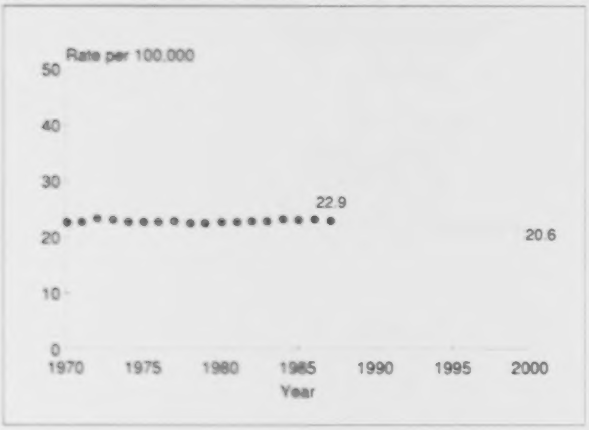


Fig. 16.3

Age-adjusted breast cancer death rate

Breast cancer is the second leading cause of cancer death among women. In 1990, an estimated 44,000 women will die of breast cancer, while 150,000 new female cases will be diagnosed.[2] Approximately 1 woman in every 10 will develop breast cancer in her lifetime.

Screening for breast cancer can reduce breast cancer mortality among women aged 50 and older. A controlled trial that started in the early 1960s demonstrated a 30-percent reduction in breast cancer mortality among women screened by mammography and clinical breast examination.[64] More recent studies confirmed the effectiveness of screening mammography in reducing breast cancer mortality.[66,69] Nonetheless, only 25 percent of women aged 50 and older had received clinical breast examination and mammography within the preceding 2 years in 1987.[49]

To set a target for this objective, the age-adjusted death rate for breast cancer was projected to the year 2000 assuming a linear trend. The estimated possible reduction in breast cancer deaths was developed using the CAN*TROL computer model[15] and then applied to the projected value. The model calculates the effect of specified cancer control activities on cancer incidence, prevalence, and mortality. The model calculations included the following data inputs: (1) the estimated 1985 U.S. female population, (2) incidence rates for breast cancer among women, (3) stage distributions for women offered and not offered a breast cancer screening program, and (4) stage-specific survival rates.

For the purposes of this modeling effort, it was assumed that women aged 50 through 75 would receive the stage-shift benefit from increased breast cancer screening. Increased utilization of mammography was assumed to occur in three increments. The proportion of women aged 50 and older annually receiving mammography and clinical breast examination was set at 30 percent between 1990 and 1994, 45 percent between 1995 and 1998, and 60 percent between 1999 and 2000. These figures compare with the 1987 estimate of 19 percent of women aged 50 and older who received a mammogram and clinical breast examination in the previous year.[49]

Given these parameters, the CAN*TROL model estimates a reduction in the age-adjusted death rate for female breast cancer of 9.5 percent from a projected rate in the year 2000 of 22.8 per 100,000 to 20.6 per 100,000 women. Using the same parameters, but assuming annual mammography utilization will increase to either 40 percent or 80 percent among women aged 50 and older, the model predicts age-adjusted mortality reductions of 7 or 15 percent, respectively.

16.4 Reduce deaths from cancer of the uterine cervix to no more than 1.3 per 100,000 women. (Age-adjusted baseline: 2.8 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 3.2 and 1.5 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

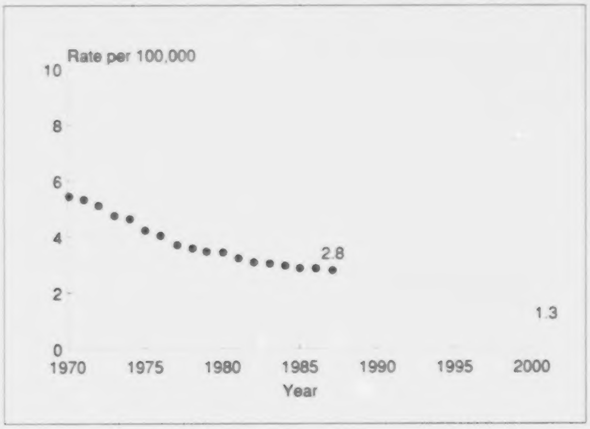


Fig. 16.4

Age-adjusted cervical cancer death rate

Cancer of the uterine cervix is one of the most commonly occurring cancers for women. More than 50,000 cases of carcinoma in situ of the uterine cervix are detected annually. In 1990, approximately 13,500 new cases of invasive cancer of the uterine cervix will be diagnosed, and about 6,000 women will die from cervical cancer.[2]

Use of the Pap test to screen for cervical cancer greatly reduces the risk of death from invasive cervical cancer. The decline in cervical cancer mortality in the 1970s and 1980s is thought to be due primarily to the widespread use of the Pap test for early detection of cervical cancer. The most recent National Health Interview Survey suggests that a significant proportion of women are not receiving Pap tests regularly and that the women at greatest risk of cervical cancer mortality (older women) are least likely to have been screened.[49]

Increasing Pap test utilization has the potential to reduce mortality from cancer of the uterine cervix between the years 1990 and 2000. Data from the International Agency for

Research on Cancer (IARC) indicate the impact of recency of Pap test utilization on the incidence of invasive cervical cancer.[29] Furthermore, increased utilization of Pap tests may produce a shift toward earlier stage disease, with its attendant improved survival rate.[47] Realizing the full potential for risk reduction due to Pap tests will also require efforts to ensure the quality of specimen collection and laboratory analysis (see Objective 16.15).

To set a target value for this objective, the age-adjusted death rate for cervical cancer was projected to the year 2000 assuming a logarithmic trend. The estimated reduction in cervical cancer deaths was developed using the CAN*TROL computer model[15] and then applied to the expected value. The CAN*TROL model calculates the effect of specified cancer control activities on cancer incidence, prevalence, and mortality. The model calculations included the following data inputs: (1) the estimated 1985 U.S. female population, (2) incidence rates for cancer of the uterine cervix among women, (3) stage distributions for women receiving and not receiving annual Pap test screening, and (4) stage-specific survival rates.

For the purposes of this modeling effort, it was assumed that women aged 20 through 85 would receive the stage-shift benefit from increased cervical cancer screening. Increased utilization of Pap tests was assumed to occur in three increments. The proportion of women aged 20 and older annually receiving Pap tests was set at 62 percent between 1990 and 1995, 69 percent between 1996 and 1998, and 75 percent between 1999 and 2000. These figures compare with the 1987 estimate of 56 percent of women aged 18 and older who received a Pap test in the previous year.[49]

Given these parameters, the CAN*TROL model estimates that the age-adjusted death rate for cancer of the uterine cervix will decline by 12 percent from a projected rate in the year 2000 of 1.5 per 100,000 to 1.3 per 100,000 women.

16.5 Reduce colorectal cancer deaths to no more than 13.2 per 100,000 people. (Age-adjusted baseline: 14.4 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 20.1 and 18.7 per 100,000, respectively.

Baseline data source: National Vital Statistics System, CDC.

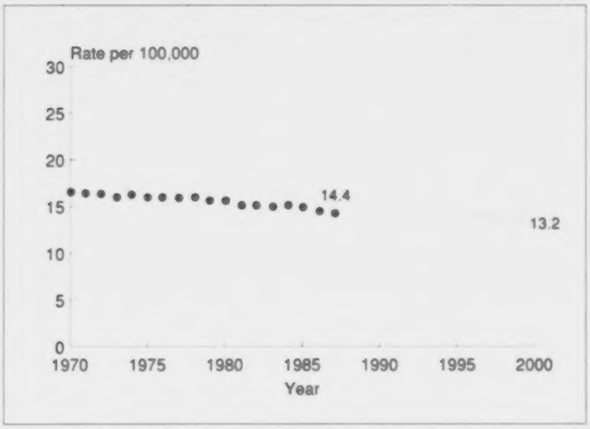


Fig. 16.5

Age-adjusted colorectal cancer death rate

Colorectal cancer is the second leading cause of death due to cancer in the United States. In 1990, an estimated 60,900 Americans will die from cancers of either the colon or rectum, while 155,000 new cases will be diagnosed.[2]

The age-adjusted death rate from colorectal cancer declined an average of 0.9 percent per year from 1982 to 1986.[47] Concomitantly, the incidence of colorectal cancer increased by 0.8 percent per year. These changes were accompanied by a shift toward earlier stages at diagnosis for these cancers. The proportion of colorectal cancers diagnosed as advanced disease has been decreasing, while the proportion diagnosed in situ and with localized disease has increased from 32 to 43 percent.[47]

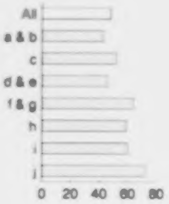
Stage-specific survival rates for cancers of the colon and rectum have also been improving. Five-year relative survival rates for colon cancer cases increased from 50 percent for those diagnosed between 1974 and 1976 to 54 percent among those diagnosed between 1979 and 1984.[47] For rectal cancer cases, these rates similarly improved from 48 to 50 percent. Meanwhile, the proportion of rectal cancer cases receiving both surgery and radiation therapy increased from 3 percent in 1973 to 16 percent in 1985.

These changes appear to be due to both early detection and treatment improvements. It is not possible to separate the contribution of each of these interventions in reducing mortality. These efforts must be maintained, if deaths from colorectal cancer are to continue to decline at the current rate. Based on results from the CAN*TROL computer model, the estimated mortality rate for colorectal cancer would decline only to 14.0 by the year 2000 if current efforts were not to continue. Therefore, this objective has been developed based on the following assumptions: (1) increased early detection efforts will lead to a continued shift toward earlier stage at diagnosis for colorectal cancer, which in turn, will contribute to a continued decline in colorectal cancer mortality, and (2) increasing application of state-of-the-art therapy for colorectal cancer will contribute to continued improvements in colorectal cancer mortality.

Risk Reduction Objectives

16.6* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*	*Percent Decrease*
16.6a	**People with a high school education or less aged 20 and older**	**34%**	**20%**	
16.6b	**Blue-collar workers aged 20 and older**	**36%**	**20%**	
16.6c	**Military personnel**	**42%**[†]	**20%**	
16.6d	**Blacks aged 20 and older**	**34%**	**18%**	
16.6e	**Hispanics aged 20 and older**	**33%**[‡]	**18%**	
16.6f	**American Indians/Alaska Natives**	**42-70%**[§]	**20%**	
16.6g	**Southeast Asian men**	**55%**[+]	**20%**	
16.6h	**Women of reproductive age**	**29%**[††]	**12%**	
16.6i	**Pregnant women**	**25%**[‡‡]	**10%**	
16.6j	**Women who use oral contraceptives**	**36%**[§§]	**10%**	

[†] *1988 baseline*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1979-87 estimates for different tribes*

[+] *1984-88 baseline*

[††] *Baseline for women aged 18-44*

[‡‡] *1985 baseline*

[§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

Baseline data sources: National Health Interview Survey, CDC; Worldwide Survey of Substance Abuse and Health Behavior Among Military Personnel, U.S. Department of Defense; Hispanic Health and Nutrition Examination Survey, CDC; for American Indians and Alaska Natives, CDC 1987; for Southeast Asian men, local surveys[30,60,36]; for women who use contraceptives, Behavioral Risk Factor Surveillance System, CDC.[23]

*For commentary, see Objective 3.4 in *Tobacco*. This objective also appears as Objective 15.12 in *Heart Disease and Stroke*.

16.7* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

Note: The inclusion of a saturated fat target in this objective should not be interpreted as evidence that reducing only saturated fat will reduce cancer risk. Epidemiologic and experimental animal studies suggest that the amount of fat consumed rather than the specific type of fat can influence the risk of some cancers.

Baseline data sources: 1976-80 National Health and Nutrition Examination Survey (NHANES II), CDC; 1985 Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

*For commentary, see Objective 2.5 in *Nutrition*. This objective also appears as Objective 15.9 in *Heart Disease and Stroke*.

16.8* **Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of fruits and vegetables and 3 servings of grain products for women aged 19 through 50 in 1985)**

Baseline data source: Continuing Survey of Food Intakes by Individuals (CSFII), USDA.

*For commentary, see Objective 2.6 in *Nutrition.*

16.9 **Increase to at least 60 percent the proportion of people of all ages who limit sun exposure, use sunscreens and protective clothing when exposed to sunlight, and avoid artificial sources of ultraviolet light (e.g., sun lamps, tanning booths). (Baseline data available in 1992)**

Skin cancer is the most common form of cancer in the United States, accounting for about 600,000 new cases annually or roughly one-third of all new cancer cases.[2] Most skin cancers are basal cell and squamous cell carcinomas that are highly treatable and rarely metastasize. Of the two, basal cell cancer is more common. Squamous cell is more invasive and accounts for three-fourths of nonmelanoma skin cancer deaths. However, both types will account for only about 2,500 deaths in 1990.[2] The most serious form of skin cancer is malignant melanoma. It is far rarer but also far more lethal and accounts for 74 percent of all skin cancer deaths. The incidence of melanoma is increasing more rapidly than any other cancer, and the number of deaths from melanoma has surpassed that for cancer of the cervix. Between 1973-74 and 1985-86, the death rate for melanoma rose from 1.7 per 100,000 people to 2.2 per 100,000.[48] An estimated 27,600 new cases of malignant melanoma will occur in 1990, and 6,300 people will die of this disease.[2]

Exposure to nonionizing solar radiation appears to be the chief risk factor for nonmelanoma skin cancer and may be responsible for more than 90 percent of skin cancer cases.[44] The carcinogenic effects appear to be produced by ultraviolet-B (UV-B) radiation in the 290 to 320 nanometer range, the same range that produces tanning and burning in human skin. Data indicate that nonmelanoma skin cancer is related to annual cumulative exposure. The association is strongest for squamous cell carcinoma but is also strong for basal cell carcinoma. Solar radiation may be responsible for more than 90 percent of nonmelanoma skin cancer cases. Solar radiation has also been linked to skin melanoma incidence but the association is less certain. Skin melanoma may be related to exposure to high intensity UV radiation (e.g., sunburns) or exposure at young ages rather than cumulative exposure.

The incidence of nonmelanoma skin cancer varies directly with exposure to ultraviolet light and indirectly with the degree of skin pigmentation. Skin cancer rates are highest for whites, lower for Asians, and lowest for blacks. In 1977-87, the incidence for blacks was only 3.4 per 100,000 compared to 232.6 per 100,000 for whites.[44] Compared to white women, white men experience 1½ to 2 times the incidence of basal cell cancer and 2 to 3 times the incidence of squamous cell cancer. Both types occur most often on the face, head, and neck. Women have higher rates than men for both types of cancers on the legs. Men have more squamous cell cancer of the lip.

Numerous authorities have recommended that people of all ages, and especially those with light complexions, limit sun exposure. Parents and caregivers should limit sun exposure for infants and children. Special care should be taken to limit sun exposure in warmer climates, at higher altitudes, during the summer months, and during midday. Time of day and time of year are important determinants of exposure to UV-B radiation.

The greatest amount of UV-B radiation occurs during the summer months, and one-third of a day's total amount occurs between the hours of 11 a.m. and 1 p.m. (or 12 noon and 2 p.m. Daylight Savings Time).[44] Although latitude or distance from the equator generally determines amount of UV-B radiation in a given location, amount of ozone in the atmosphere, altitude, and sky cover are also determining factors.

Sunscreen agents can block carcinogenic UV rays[57] and can reduce the incidence of skin tumors in laboratory animals.[33,72] Hence, many authorities advocate the use of sunscreen preparations rated 15 SPF (Sun Protective Factor) or more during sun exposure. In addition, individuals should avoid unnecessary UV exposure from artificial sources like sunlamps and tanning booths.

Specific baseline data for this objective are not available. However, a survey found that 30 percent of adults and 50 percent of adolescents engage in sun tanning.[1] Fully 23 percent of adults and 33 percent of adolescents fail to use protective measures while sun tanning.

Efforts to educate the public about the hazards of sun exposure and the value of protective actions may facilitate attainment of this objective. In 1987, only 54 percent of adults and 37 percent of adolescents were aware of the risks of sun exposure.[1] Employers of outdoor workers should consider sun exposure when establishing work schedules and should encourage the use of sunblocks and protective clothing. School playgrounds and outdoor recreation areas should ensure the availability of adequate shade.

Services and Protection Objectives

16.10 Increase to at least 75 percent the proportion of primary care providers who routinely counsel patients about tobacco use cessation, diet modification, and cancer screening recommendations. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986)

Baseline data source: Wells et al. 1986.

Primary care providers are optimally positioned in the health care system to provide preventive services. In national surveys, the public has described physicians in particular as the most reliable and credible sources of health information. Data from the National Health Interview Survey indicate that Americans visit a physician an average of 5.3 times per year. In addition, 77 percent of Americans reported visiting a physician within the preceding year.[54] Many of those visiting a physician are in need of cancer control services (68 to 80 percent), including smokers, women, low-income individuals, minorities, and older adults.[52] Furthermore, with return visits accounting for 73 to 85 percent of primary care encounters, primary care providers have the opportunity to deliver multiple preventive services and continued followup to individuals in need of these services.[24,54] For purposes of this objective, primary care providers are defined as general practitioners, family physicians, internists, obstetrician/gynecologists, physician assistants, nurse practitioners, and nurses. Advice from other health professionals regarding some or all of these topics (e.g., dentists and tobacco cessation counseling, dietitians and nutrition counseling) reaches even more people and serves to reinforce the message for many patients.

Research indicates that the quality of physician practice of cancer control activities is suboptimal. Although the effectiveness of brief smoking cessation counseling by primary care providers has been demonstrated,[35] approximately one-half of adult smokers in the United States report that they have never received advice from a physician to quit smoking.[41] A meta-analysis of 9 physician surveys, 3 chart audit studies, and 3 consumer surveys estimated that physicians provide smoking cessation counseling for only 50 to 60 percent of their smoking patients.[37] (See Objective 3.8 in *Tobacco*.)

Dietary modifications also can be achieved through primary care interventions. Dietary assessment, advice, counseling, and followup by physicians and/or dietitians/nutritionists have been found to be effective in reducing dietary fat intake and serum cholesterol.[28] Yet only 26 percent of adults report that "eating proper foods" was discussed during visits to a doctor or other health professional for routine care.[53] A meta-analysis of 9 physician surveys, 2 chart audit studies, and 1 consumer survey estimated that physicians provide diet counseling for only 40 to 50 percent of their patients.[37] It is unknown how often the dietary information provided by primary care providers includes recommendations for cancer risk reduction. (See Objective 1.18 in *Nutrition*.)

Similarly, a 1985 national survey found that more than 50 percent of primary care physicians never recommend screening mammography to their female patients.[4] Yet one of the most important reasons women give for not getting a mammogram at the recommended frequency is that "it was not recommended by a physician."[50] When physicians do recommend screening mammography, 2 out of 3 patients obtain the examination.[7] Common barriers to the recommendation of mammography by physicians include patient reluctance, cost, and concerns about the risks of radiation exposure.[50] (See Objective 16.11.)

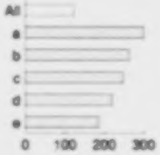
Although many physicians consider smoking cessation and diet modification important for their patients, they often feel ill-prepared to counsel patients about these behaviors. When asked about their confidence in dealing with dietary change, 35 percent of Massachusetts primary care physicians reported being "very prepared" to counsel patients and only 7 percent reported feeling "very successful" in this regard.[70] Only a small minority of physicians feel adequately prepared to counsel their smoking patients about quitting.[56] Research on physician and dentist smoking cessation activities indicates that skills training can improve performance of cancer control activities in clinical practice.[45] Based on this research, the National Cancer Institute has recently developed a model for training physicians to deliver smoking cessation advice and counseling.[22] Medical schools, residency training programs, hospitals, and professional medical associations and societies offering continuing medical education can help to ensure that providers acquire the requisite skills. In addition, several randomized controlled trials have indicated that office reminder systems can improve physician compliance with cancer prevention and control regimens.[42,43]

16.11 Increase to at least 80 percent the proportion of women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 36 percent of women aged 40 and older "ever" in 1987; 25 percent of women aged 50 and older "within the preceding 2 years" in 1987)

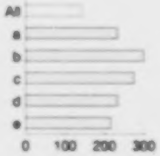
Special Population Targets

	Clinical Breast Exam & Mammogram:	*1987 Baseline*	*2000 Target*
	Ever Received—		
16.11a	**Hispanic women aged 40 and older**	**20%**	**80%**
16.11b	**Low-income women aged 40 and older (annual family income <$10,000)**	**22%**	**80%**
16.11c	**Women aged 40 and older with less than high school education**	**23%**	**80%**
16.11d	**Women aged 70 and older**	**25%**	**80%**
16.11e	**Black women aged 40 and older**	**28%**	**80%**

Percent Increase



	Received Within Preceding 2 Years—		
16.11a	**Hispanic women aged 50 and older**	**18%**	**60%**
16.11b	**Low-income women aged 50 and older (annual family income <$10,000)**	**15%**	**60%**
16.11c	**Women aged 50 and older with less than high school education**	**16%**	**60%**
16.11d	**Women aged 70 and older**	**18%**	**60%**
16.11e	**Black women aged 50 and older**	**19%**	**60%**



Baseline data source: National Health Interview Survey, CDC.

Research indicates that mortality due to breast cancer can be reduced by 30 percent among women aged 50 and older through the use of mammography and clinical breast examination.[63,66] Breast cancer mortality may also be reduced among women aged 40 through 49 receiving these examinations, but the magnitude of the benefit is considerably less.[12] The optimal frequency for screening remains to be determined. An annual interval is recommended by some groups, but it may not confer greater benefit than screening every 2 years.[66] The American Cancer Society and the National Cancer Institute recommend monthly breast self-examination and regular clinical breast examination for all women, a baseline mammogram for women between ages 35 and 40, mammography every 1 to 2 years for women aged 40 through 49, and annual mammography for women aged 50 and older.[3,46] Other authorities support annual clinical breast examination for all women starting at age 40 but do not recommend beginning yearly mammography until age 50. Most recently, the U.S. Preventive Services Task Force issued the following recommendation: "All women over age 40 should receive an annual clinical breast examination. Mammography every 1 to 2 years is recommended for all women beginning at age 50 and concluding at approximately age 75 unless pathology has been detected. It may be prudent to begin screening at an earlier age for women at high risk for breast cancer (family history of premenopausally diagnosed breast cancer in first degree relatives)."[68] Despite uncertainty about when to begin mammography for women not at high risk, two facts are clear: (1) there is universal agreement on the need for regular mammograms after age 50, and (2) the proportion of women over age 50 following this recommendation is relatively small.

The 1987 National Health Interview Survey Cancer Control Supplement provides the best available national estimates of breast cancer screening utilization by U.S. women.[49]

According to this survey, 36 percent of women aged 40 and older have ever received clinical breast examination and mammography. This figure was 38 percent for white women, 28 percent for black women, 25 percent for women aged 70 and older, 23 percent for women with less than high school education, 22 percent for women with an annual family income of less than $10,000, and 20 percent for Hispanic women. Special population targets have been established for each group with a baseline estimate lower than the total population estimate (36 percent).

In 1987, 25 percent of women aged 50 and older reported having had a clinical breast examination and mammogram within the preceding 2 years. This figure was 27 percent for white women, 19 percent for black women, 18 percent for women aged 70 and older, 18 percent for Hispanic women, 16 percent for women with less than high school education, and 15 percent for women with an annual family income of less than $10,000. More recent data from several regional surveys suggest a substantial increase in mammography use, with 25 to 46 percent of women aged 50 through 70 reporting they received a mammogram in the preceding year.[9,47] This is consistent with a recent surge in the reported incidence of in situ breast cancer, as well as data from the Food and Drug Administration indicating an increase in the delivery of new mammography units.

These findings raise the question of what is the upper bound of compliance for screening mammography that can realistically be achieved by the year 2000. The Health Insurance Plan study of breast cancer screening achieved an annual mammography compliance rate of approximately two-thirds.[63] A more recent study in Sweden achieved a biennial compliance rate on the order of 80 percent with a centralized program.[66] In view of the low likelihood that the compliance rates from these ideal circumstances could be achieved by the year 2000, the objective calls for 60 percent of women aged 50 and older to have had a clinical breast examination and mammogram within the preceding 2 years.

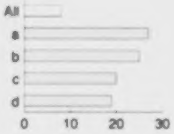
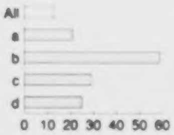
Women eligible for mammography report that the two most important reasons why they did not receive a recent mammogram is that they did not know they needed it or their doctor did not recommend it.[50] In surveys, physicians report a number of barriers to their recommendation of mammography to patients, including cost, belief that the examination is unnecessary, and concerns about the risk of radiation exposure.[4] Cost has also been reported by women as a barrier to mammography utilization.[59] In addition, low education and income, advancing age, and the lack of a usual source of health care have been associated with lower rates of mammography utilization.[67]

Utilization of mammography and clinical breast examination can be improved through the use of physician reminder systems and physician audits with performance feedback.[42] Utilization of mammography can also be improved through patient education.[43] Realizing the full potential of mammography to reduce morbidity and mortality will also require efforts to ensure the quality of mammographic screening (see Objective 16.16).

The following are key assumptions on which this objective is based: (1) self-reported data provide a valid measure of screening utilization; (2) interventions can be developed to overcome barriers to breast cancer screening associated with race and ethnicity, age, education, and income; and (3) a positive mammogram will be followed by timely, state-of-the-art diagnostic workup and therapy where indicated.

16.12 Increase to at least 95 percent the proportion of women aged 18 and older with uterine cervix who have ever received a Pap test, and to at least 85 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 88 percent "ever" and 75 percent "within the preceding 3 years" in 1987)

Special Population Targets

	Pap Test:	*1987 Baseline*	*2000 Target*	*Percent Increase*
	Ever Received—			
16.12a	**Hispanic women aged 18 and older**	75%	95%	
16.12b	**Women aged 70 and older**	76%	95%	
16.12c	**Women aged 18 and older with less than high school education**	79%	95%	
16.12d	**Low-income women aged 18 and older (annual family income <$10,000)**	80%	95%	
	Received Within Preceding 3 Years—			
16.12a	**Hispanic women aged 18 and older**	66%	80%	
16.12b	**Women aged 70 and older**	44%	70%	
16.12c	**Women aged 18 and older with less than high school education**	58%	75%	
16.12d	**Low-income women aged 18 and older (annual family income <$10,000)**	64%	80%	

Baseline data source: National Health Interview Survey, CDC.

A number of studies have found that the Pap test is effective in screening for cancer of the uterine cervix, reducing mortality from the disease by as much as 75 percent.[6,11,29,31,32,40] The decline in cervical cancer mortality in the 1970s and 1980s is thought by many experts to be due primarily to widespread use of the Pap test for early detection of cervical cancer.

A variety of recommendations have been made regarding the age at which screening for cervical cancer should begin and the frequency with which it should occur. In the United States, current recommendations of various government and professional groups leave the frequency of screening to the discretion of the physician, though all organizations suggest an interval of 1 to 3 years.[55] Examination of results of ongoing screening programs in Europe and North America indicate that the greatest protection against cervical cancer is provided in the 5 years following a negative smear, but the effect virtually disappears after 10 years.[13,29] A recent case control study conducted in the United States indicates an increasing risk of cervical cancer if the screening interval exceeds 2 years.[65]

Age influences both cervical cancer incidence and survival. While younger women are more frequently diagnosed with cervical cancer, older women are more often diagnosed at later stages of the disease and are more likely to die from it than younger women. Although the benefit of Pap testing after age 65 has been questioned if repeated tests have been normal, a significant number of older women have not received regular screening. Thus, further screening of this age group is important and is likely to extend substantial health benefits to older women.[55]

Low income, low education, and advancing age are all associated with a decreased likelihood of receiving Pap tests. According to the 1987 National Health Interview Survey, 88 percent of women aged 18 and older with uterine cervices had ever received a Pap test.[49] This figure was 90 percent for white women, 88 percent for black women, 80 percent for women with an annual family income of less than $10,000, 79 percent for women with less than high school education, 76 percent for women aged 70 and older, and 75 percent for Hispanic women. Rates for utilization within the preceding 3 years were lower still. Among women aged 18 and older with uterine cervices, 75 percent reported having had a Pap test in the preceding 3 years. This figure was 80 percent for black women, 76 percent for white women, 66 percent for Hispanic women, 64 percent for women with an annual family income of less than $10,000, 58 percent for women with less than high school education, and 44 percent for women aged 70 and older. Special population targets have been established for each group with baseline estimates lower than the total population estimates (88 and 75 percent).

Several interventions can increase Pap test utilization. The Rand Health Insurance Experiment provides evidence that insurance coverage of preventive services increases the utilization of Pap tests.[38] Physician reminders have also been demonstrated to improve utilization of Pap tests.[42]

The following key assumptions have been relied on in formulating this objective: (1) self-reported data provide a valid measure of screening behavior; (2) interventions can be developed to overcome barriers to Pap test utilization associated with age, education, and income; (3) difficulties in identifying women who have never been sexually active or who have had repeated negative Pap tests require that cervical cancer screening programs address the entire population of American women with uterine cervices; (4)laboratory facilities and trained cytotechnologists will be available in adequate supply to implement this objective; (5) Pap tests will meet quality standards; and (6) a positive Pap test will be followed by timely, state-of-the-art diagnostic workup and therapy where indicated.

16.13 Increase to at least 50 percent the proportion of people aged 50 and older who have received fecal occult blood testing within the preceding 1 to 2 years, and to at least 40 percent those who have ever received proctosigmoidoscopy. (Baseline: 27 percent received fecal occult blood testing during the preceding 2 years in 1987; 25 percent had ever received proctosigmoidoscopy in 1987)

Baseline data source: National Health Interview Survey, CDC.

In both sexes, colorectal cancer is the second leading cause of death due to cancer in the United States. In 1990, an estimated 60,900 Americans will die from cancers of either the colon or rectum, while 155,000 new cases will be diagnosed.[2]

Survival for patients with colorectal cancer varies considerably with the extent of disease at diagnosis. Five-year survival is 85 percent with localized disease, 55 percent with regional disease, and 6 percent with distant disease.[47] Preliminary research data indicate that screening for cancers of the colon and rectum with fecal occult blood testing can shift the extent of disease at diagnosis to earlier stages.[20] The impact of this shift on mortality due to cancers of the colon and rectum is as yet uncertain.

Some research has also suggested that screening for colorectal cancer with proctosigmoidoscopy may be effective in reducing the incidence and mortality of the disease.[19,21] Several clinical trials are underway to evaluate the effectiveness of proctosigmoidoscopy in reducing colorectal cancer mortality, but the issue is unsettled.[62] If effective, the optimum frequency for proctosigmoidoscopy also remains to be determined. Modeling studies suggest that a frequency of every 3 to 5 years would preserve 70 to 90 percent of the effectiveness of annual screening of people with a family history of colon cancer.[17]

Baseline data for this objective are provided by the 1987 National Health Interview Survey.[49] These data indicate that 27 percent of people aged 50 and older reported having received fecal occult blood testing in the preceding 2 years from a doctor or other health professional, 19 percent within the preceding year. This survey also found that 25 percent of people aged 50 and older had ever received proctosigmoidoscopy and 14 percent had received proctosigmoidoscopy within the preceding 5 years.

Utilization of fecal occult blood testing and proctosigmoidoscopy may be improved through the use of physician reminder systems and the replacement of rigid with flexible sigmoidoscopes.[43,60] Barriers to proctosigmoidoscopy include cost, discomfort, complications, patient acceptance, and availability of equipment and adequately trained physicians.[62]

The following assumptions are the basis for this objective: (1) fecal occult blood testing and proctosigmoidoscopy have the potential to reduce the morbidity and mortality associated with cancers of the colon and rectum, (2) patients offered fecal occult blood testing and/or proctosigmoidoscopy by a physician will receive current information about the potential risks and benefits of the tests, (3) fecal occult blood testing will be performed in accordance with current recommendations for dietary preparation, sample collection and storage, and slide development, (4) proctosigmoidoscopy will be performed by physicians with appropriate training, (5) by age 50, most people should have begun to receive regular fecal occult blood testing and/or proctosigmoidoscopy for the early detection of colorectal cancer, (6) those with especially strong family histories for colorectal cancer will be followed closely, with early and frequent tests as indicated, and (7) a positive fecal occult blood test or proctosigmoidoscopic examination will be followed by timely, state-of-the-art diagnostic workup and therapy where indicated. Continual assessment of these assumptions is key.

16.14 Increase to at least 40 percent the proportion of people aged 50 and older visiting a primary care provider in the preceding year who have received oral, skin, and digital rectal examinations during one such visit. (Baseline: An estimated 27 percent received a digital rectal exam during a physician visit within the preceding year in 1987)

Baseline data source: National Health Interview Survey, CDC.

The National Cancer Institute, the American Cancer Society, and the Canadian Task Force on the Periodic Health Examination recommend periodic visual inspection of the oral cavity for the early detection of oral cancer.[3,8,14,46] Survival with oral cancer varies substantially with stage, with a 5-year survival of 75 percent for localized disease and 17 percent for distant disease.[47] The sensitivity, specificity, and predictive value positive of oral examination in the detection of oral cancer are unknown. (See also Objective 13.7 in *Oral Health.*)

Screening for skin cancers with skin examinations has also been recommended by several national organizations and agencies.[3,46] Such examinations may be particularly beneficial in the early detection of malignant melanoma. Survival with malignant melanoma varies substantially by stage, with a 5-year survival of 90 percent for localized disease and 12 percent for distant disease.[47] Although there have been no controlled studies of the impact of skin examination on the incidence and course of malignant melanoma, data from Australia suggest that a screening program may be effective in reducing mortality from the disease.[27]

Digital rectal examination has been recommended for the early detection of colorectal and prostate cancers.[3,46] It has been estimated, however, that less than 10 percent of colorectal cancers can be palpated with digital rectal examination.[71] In the detection of prostate cancer, the precise sensitivity and specificity of the digital rectal examination are not known. Studies of predominantly asymptomatic men suggest that between 26 and 34 percent of patients with suspicious digital rectal examination have histologic evidence of prostate cancer on needle biopsy.[10,25]

Questions remain regarding the effectiveness of oral, skin, and digital rectal examinations in reducing cancer morbidity and mortality. If effective, however, these early detection procedures have the potential to reduce the burden of disease for a large number of cancer patients. Prostate cancer is the second most common cancer among men in the United States, with 106,000 new cases estimated in 1990.[2] About 600,000 cases of nonmelanoma skin cancer occur each year. In 1990, deaths from skin cancer will total about 8,800 in all, 6,300 for melanoma and 2,500 for nonmelanoma skin cancers.[2] The estimated number of deaths for oral cancer will be 8,350 in 1990.[2] In view of the potential benefits of oral, skin, and digital rectal examinations and the questions remaining regarding their effectiveness, this objective calls for them to be offered to patients aged 50 and older in the context of a physician visit.

Setting a target value for this objective is difficult given the absence of baseline data. A potential guide to current practice is provided by the 1987 National Health Interview Survey Cancer Control Supplement.[49] Self-reported data on the receipt of digital rectal examination are available from this survey. This is clearly not the same as receiving oral, skin, and digital rectal examinations during a doctor visit. Twenty-four percent of the population will not have visited a physician in the preceding year. In addition, not all patients receiving digital rectal examinations will have received oral and skin examinations. Despite these limitations, the 1987 National Health Interview Survey estimate may provide a useful guide to the likelihood of receiving these examinations during a physician visit in the preceding year.

According to this survey, 27 percent of people aged 50 and older received a digital rectal examination in the preceding year. Assuming that this is an approximate estimate of the proportion of people visiting a physician in the preceding year who received oral, skin, and digital rectal examinations, the target for this objective has been set at 40 percent.

The following assumptions underlie this objective: (1) oral, skin, and digital rectal examinations have the potential to reduce the morbidity and/or mortality associated with cancers of the oral cavity, skin, colon and rectum; (2) the optimal age at which to begin oral, skin, and digital rectal examinations is 50; (3) the optimal frequency of receipt of oral, skin, and digital rectal examinations is annual; and (4) a positive oral, skin, or digital rectal examination will be followed by timely, state-of-the-art diagnostic workup and therapy where indicated. Continual assessment of these assumptions is key.

16.15 Ensure that Pap tests meet quality standards by monitoring and certifying all cytology laboratories. (Baseline data available in 1991)

The accuracy of the Pap test is dependent on adequate collection, correct preparation and staining, and accurate interpretation. The diagnostic value of the specimen will be seriously compromised if any of these components is inadequate. Recently, there has been much coverage in the press regarding the reliability of the Pap test, especially pertaining to false negative results. A wide range of false negative results is reported in the literature, though comparison between reports is difficult because of differences in sample collection, range of lesions assessed, and methods used to calculate results.[5] Regardless of the percentage of false negatives, it is clear that the error rate of cytologic screening is substantial and that remedial actions are needed.[34]

No national systems are currently in place to ensure the quality of cytology laboratories. However, the Clinical Laboratory Improvement Amendments of 1988 propose a set of requirements that laboratories will have to meet in order to qualify for Medicare reimbursement. The legislation requires certification, accreditation, and inspection of Pap smear cytology laboratories and will regulate the number of cytology slides any individual may screen in a 24-hour period. Furthermore, laboratory reports to physicians will have to identify inadequate smears, as well as provide detailed descriptions of abnormal smears and recommendations for followup.[55] The recent promulgation of the 1988 Bethesda System for reporting cervical and vaginal cytologic diagnosis,[51] which modifies the original Papanicolaou classification, should help to reduce errors in communicating results to physicians.

While the effective implementation of the Clinical Laboratory Improvement Amendments of 1988 may reduce the false negative rate for Pap tests, this legislation also has implications for the availability and cost of services. Limiting the number of slides that can be read per day will increase the need for cytotechnologists. A perceived shortage of these professionals already exists. In addition, Medicare coverage of routine Pap tests will probably increase the demand for both screening services and cytotechnologists. This may result in increased costs as well as increased lag times between sampling and evaluation.[55]

16.16 Ensure that mammograms meet quality standards by monitoring and certifying at least 80 percent of mammography facilities. (Baseline: An estimated 18 to 21 percent certified by the American College of Radiology as of June 1990)

Baseline data source: American College of Radiology.

The American College of Radiology (ACR) and the National Cancer Institute estimate that there are roughly 8,000 to 10,000 mammography facilities in the United States, and the number is increasing. The Food and Drug Administration gathers data on dose and image quality from a sample of mammographic screening facilities in the NEXT survey. Results from the NEXT survey indicate that present practice of mammography is accomplished with variable but generally acceptable radiation dose, but the quality of the resulting image needs considerable improvement.[18]

A voluntary program for the certification of mammography facilities has been instituted by ACR. A program that certifies facilities based on their quality may help to reduce false positive and negative rates associated with mammography. Certification in the ACR program, which was begun in 1987, requires a dedicated mammography unit to meet quality standards in the areas of dose, image quality, personnel, equipment, techniques, and reporting mechanisms. The accuracy or consistency of image interpretation is not evaluated by this program, however.

As of June 1990, applications for ACR certification were received from 2,553 mammography facilities, 1,644 exams had been completed, and 1,352 facilities were certified. The initial failure rate is consistently 29 to 30 percent. Based on facility estimates of 8,000 to 10,000, an estimated 18 to 21 percent of mammography facilities in the United States have been certified thus far. The expansion of this program and its utilization in decisions regarding referral and reimbursement for mammography could result in improved quality of this examination nationwide.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the cancer objectives over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the cancer prevention and control objectives.
- Provide sufficient, appropriate curricular content in cancer prevention and early detection in all schools and programs preparing students for careers in the health

professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.

- Increase the provision of continuing education about cancer prevention and early detection by national professional associations whose members have roles in cancer prevention and control.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 16.1, 16.2, 16.3, 16.4, 16.5, 16.6, and 16.16.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 16.7, 16.8, 16.9, 16.11, 16.12, 16.13, and 16.14.

New surveillance systems are needed to track Objectives 16.10 and 16.15.

High Priority Needs

- Expansion of surveillance resources to provide both a more nationally representative and epidemiologically diverse data base on cancer risk, incidence, and survival, including such segments of the population as youth, older adults, Hispanics, Asians and Pacific Islanders, American Indians and Alaska Natives, and the underserved.
- Expansion of population-based cancer registries and reporting systems to provide national, State, and local data on cancer incidence and survival. Data should be comparable across registries and compatible with the Surveillance, Epidemiology, and Results Program (SEER), and should include smoking, occupation, and treatment data.
- Periodic data on the cancer-related knowledge, attitudes, and behavior of the U.S. population, with oversampling to provide estimates for black, Hispanic, low-income, and low-education populations.
- A periodic survey of primary care providers to monitor the training and behavior of practicing clinicians regarding tobacco use cessation and diet counseling and screening for early detection of cancer and to provide national estimates across professional groups and specialty areas.
- Surveillance of dietary fiber intake. The current U.S. Department of Agriculture (USDA) food and nutrient data bases, which contain information on crude fiber content of foods but not on total dietary fiber or specific types of fiber, should be updated to include dietary fiber. By 1992, the National Cancer Institute will have analyzed more than 400 foods for total dietary fiber, soluble fiber, insoluble fiber, lignin, cellulose, hemicellulose, and pectin. These data can then be used in any recurring or new national dietary surveys to more accurately assess dietary fiber intake in the United States.

Research Needs

High priority research needs include:

Cancer Control Science

- The behavioral and environmental determinants of cancer. For example, do socioeconomic characteristics fully determine group differences in cancer prevention and control behavior or are there ethnic, cultural, and institutional determinants?
- Effective channels and techniques for cancer prevention and control interventions. For example, effective approaches to cancer prevention and control through health care professionals, schools, mass media, public health departments, community coalitions, marketing channels, and microcomputer-telephone networks.
- The determinants of initiation of tobacco use in young consumers and development of effective interventions to prevent early initiation of tobacco use.
- The development and testing of cancer prevention and control interventions for special populations, including youth, older adults, blacks, Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives.
- The implications of interventions for the public, professionals, industry, and society.
- Why cancer incidence and death rates differ with advancing age.
- Ways to improve access to state-of-the-art cancer care for all populations.
- Ways to reduce the differences in cancer survival and mortality between populations at lower risk of death due to cancer and those at higher risk (e.g., blacks, low-socioeconomic status populations).
- Which early detection tests are efficacious and effective for specific age and risk groups. For example, is flexible sigmoidoscopy efficacious and effective for asymptomatic populations over the age of 50?
- Cost-effective methods for the delivery of early detection services.
- New early detection technology, such as blood serum markers.
- New statistical methods to evaluate screening in control trial and uncontrolled settings.
- Ways to improve the quality of early detection and screening services.

Cancer Prevention

- The relationship between food intake, biochemical levels of nutritional compounds, and cancer incidence. For example, what are the potential roles of fiber and vitamins in dietary cancer prevention?
- The relative importance of cancer risk factors and the temporal relationships between risk factor reduction, cancer incidence, cancer survival, and cancer mortality.
- The efficacy of potential chemoprevention agents.
- Identification of foods and dietary factors that alter risks for specific cancers and elucidation of the underlying mechanisms.

- Quantification of dietary macro- and micro-constituents.
- Identification of biologic and biochemical markers of dietary exposure.

- Expanded and improved computerized simulation models of the determinants of temporal paths of cancer incidence, survival, and mortality.
- A reliable data base of the economic costs of cancer and cancer treatment.
- The economic determinants of the supply and efficient organization of cancer prevention and control services and the financial and insurance aspects of access to such services.
- Dissemination of research on effective channels and techniques for cancer prevention and control interventions.
- Dissemination of information about the determinants of initiation of tobacco use in young consumers and effective interventions to prevent early initiation of tobacco use.
- Dissemination of results of research on cancer prevention and control interventions for special populations, including youth, older adults, blacks, Hispanics, Asians and Pacific Islanders, and American Indians and Alaska Natives.

Related Objectives From Other Priority Areas

Nutrition

2.3 Overweight
2.7 Weight loss practices
2.14 Nutrition labeling
2.15 Availability of reduced-fat processed foods
2.16 Low-fat, low-calorie restaurant food choices
2.17 Nutritious school and child care food services
2.19 Nutrition education in schools
2.20 Worksite nutrition/weight management programs
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.5 Smoking initiation by youth
3.6 Smoking cessation attempts
3.10 Tobacco-use prevention education and tobacco-free schools
3.11 Worksite smoking policies
3.12 Clean indoor air laws
3.13 Tobacco product sale and distribution to youth
3.14 State plans to reduce tobacco use
3.15 Tobacco product advertising and promotion to youth
3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.8 Alcohol consumption

Educational and Community-Based Programs

8.6 Worksite health promotion activities
8.8 Health promotion programs for older adults
8.10 Community health promotion programs

Occupational Safety and Health

10.11 Occupational lung diseases
10.12 Worksite health and safety programs

Environmental Health

11.6 Radon testing
11.12 Construction standards to minimize radon concentrations
11.13 Disclosure of lead and radon concentrations

Oral Health

13.7 Oral cancer

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.14 Patient education for chronic and disabling conditions

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

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Diabetes and Chronic Disabling Conditions

17

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17. Diabetes and Chronic Disabling Conditions

Introduction

Diabetes

Diabetes is a chronic, metabolic disease characterized by high blood glucose levels caused by a deficiency in insulin production, an impairment of insulin action, or both. Approximately 7 million people in the United States have been diagnosed with diabetes, and an additional 5 million may unknowingly have the disease. Each year more than 650,000 new cases of diabetes are identified. In 1987, diabetes was the sixth leading underlying cause of death due to disease. It was the underlying cause of death for more than 37,000 Americans and contributed to over 100,000 additional deaths. Individuals with diabetes face not only a shortened life span but also the probability of incurring acute and chronic complications. In 1987, patients with diabetes or its complications spent approximately 9 million days in the hospital. A conservative estimate of the costs (direct medical costs and costs due to lost productivity) attributable to diabetes in 1987 was $20.4 billion.[6]

Most cases of diabetes fall into one of two clinical types: insulin-dependent diabetes mellitus (IDDM) and noninsulin-dependent diabetes mellitus (NIDDM). Each type has a different cause, prognosis, and treatment. Approximately 5 to 10 percent of diabetics have IDDM, formerly known as juvenile diabetes, and also referred to as Type I diabetes. It usually appears in childhood or adolescence and is characterized by a virtually complete inability to produce insulin. Patients with IDDM would die without daily insulin injections to control their disease. IDDM accounts for a disproportionate share of the total morbidity and premature mortality associated with diabetes. Most people with diabetes have NIDDM, also referred to as Type II diabetes. It usually appears after the age of 40, is often associated with obesity, and may be controlled by diet and exercise, sometimes in combination with oral hypoglycemic agents. Despite the name—noninsulin-dependent diabetes—some people with this type of diabetes are treated with insulin. In both types of diabetes, patients are treated with a regimen of diet, physical activity, medication, and blood or urine glucose monitoring. Objectives 17.9 through 17.14 in this chapter are specifically proposed to reduce the considerable morbidity and mortality caused by diabetes.

Chronic Disabling Conditions

Preventing unnecessary deaths is only one item on the public health agenda. The preservation of physical and mental function is also essential. Quality, not merely quantity, of life has become the issue. Unprecedented gains in life expectancy, combined with the increased ability of medical technology to avert death without always restoring health, add to the increasing prevalence of chronic conditions. Chronic and disabling conditions can have profound effects on a person's ability to function, whether it be a child with mental retardation, a young adult with a spinal cord injury, or an older adult with osteoarthritis. A disease, developmental condition, or injury does not necessarily lead to disability (i.e., the state of being limited in the type or amount of activities a person would otherwise perform). Whether it does depends on the effectiveness of treatment, the level of functional impairment caused by the condition, and the activities the individual is expected or wants to do.

Roughly 33 million Americans have physical or mental impairments that limit their activity, and more than 9 million have functional limitations so severe that they cannot work, attend school, or maintain a household.[90] An additional 2 million Americans are in institutions as a result of functional limitations. In 1983-85, the chronic conditions most frequently indicated as the main cause of activity limitation were arthritis (12.3 percent of all people with activity limitation), heart disease (11.5 percent), spinal curvature or back impairments (7.8 percent), impairments of lower extremities (6.1 percent), and intervertebral disk disorders (4.4 percent).[70] For people under age 18, the most prevalent causes were mental retardation (18 percent), asthma (17.8 percent), mental illness (9.5 percent), hearing impairments (7.2 percent), and speech impairments (6.3 percent). For adults aged 18 through 44, spinal curvature, intervertebral disk disorders, and other back impairments accounted for 23 percent of the activity limitation. At the older ages, degenerative diseases such as arthritis and heart disease predominated.

Disability is multidimensional, and disability in one dimension does not automatically imply disability in another. Some people who are able to work, for example, need assistance with personal care or home management activities. Of the total noninstitutionalized population, 3.6 percent or about 7.6 million people need help with either activities of daily living (ADL) such as bathing, eating, dressing, or getting around inside and/or instrumental activities of daily living (IADL) such as household chores, doing necessary business, shopping, or getting around for other purposes. The proportion of people needing assistance rises steeply with age, from 2 percent for people aged 16 through 64, to 8 percent among people aged 65 through 69, to 46 percent among those aged 85 and older. In 1983-85, arthritis was the most frequent cause of need for assistance, followed by heart disease, visual impairments, cerebrovascular disease, and impairments of the lower extremities.[70] If the institutionalized population is considered, there are an estimated 3.6 million people younger than age 65 and 5.7 million people aged 65 and older in the United States who need assistance with personal care or home management activities.

Multiple chronic conditions dramatically increase the risk of disability and result in greater use of medical care services.[116] The condition combinations most disabling in terms of work are heart disease and emphysema, and heart disease and cerebrovascular disease. Those most likely to result in personal care assistance needs are cerebrovascular disease combined with either diabetes or the absence or paralysis of extremities.

In 1986, direct disability-related expenditures (e.g., Federal income support, employee assistance, and other programs related to rehabilitation) totaled $67.6 billion. An additional $101.8 billion was spent on medical care, worker's compensation, and insurance.[17] If the value of time lost due to nonreimbursed caretaker activity and to inability to work is factored in, the annual disability-related cost to the Nation probably exceeds $200 billion.[31]

Primary prevention measures aim to prevent disabilities from occurring, thereby reducing the incidence and prevalence of impairments in the total population. Numerous objectives throughout this document address the primary prevention of disabilities. For example, objectives found in *Occupational Safety and Health*, *Unintentional Injuries*, and *Violent and Abusive Behavior* seek to prevent disabilities resulting from injuries. Objectives in *Maternal and Infant Health* and *Alcohol and Other Drugs* are intended to prevent a variety of congenital anomalies and developmental disabilities.

Although not all chronic conditions and impairments can be prevented, disability need not be an inevitable consequence of a chronic disease, an impairment, or even a functional limitation. The response to an initially occurring disease, injury, or condition in terms of expenditures, medical care, education, assistive technology, and an array of related social-support services, will affect the extent of functional limitation and the potential for progression to disability. Although largely beyond the scope of this document, secondary and tertiary prevention efforts are essential to interrupting the progression from disease or injury to impairment, functional limitation, and disability. Much can be done to prevent disability once a condition has occurred. Furthermore, much can be done to reduce the likelihood of additional disabling complications and to improve the quality of life for people with disabilities. Finally, because disability is a behavioral state—a limitation in activity—that occurs within a specific social and cultural context, environmental and social factors, such as access to transportation, buildings, and communications, and public attitudes, especially those of employers, are among the determinants of whether disability and dependency is the outcome of limitation.

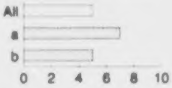
Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

Chronic Disabling Conditions

17.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*	*Percent Increase*
17.1a	**Blacks**	56	60	
17.1b	**Hispanics**	62	65	
17.1c	**People aged 65 and older**	12†	14†	

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Baseline data source: National Vital Statistics System and the National Health Interview Survey (special analysis), CDC.[46]

Traditionally, the Nation's health has been measured in terms of deaths—infant mortality, life-expectancy, age-specific and disease-specific death rates, and years of potential life lost before age 65. Though informative, these measures do not describe whether the population is predominantly well or is heavily burdened with chronic illness and disability. Furthermore, measures of mortality understate the public health importance of conditions that result in proportionately more morbidity and disability than mortality.

In recent years, considerable effort has been devoted to developing a comprehensive measure of the population's health that combines morbidity and mortality. Without such a measure, efforts to monitor the Nation's health, identify health priorities, evaluate the effectiveness of interventions, and compare the relative effectiveness of alternative interventions are hindered. While several approaches have been developed, the quality-adjusted life year (QALY) has emerged as one of the most commonly used health status measures that includes both mortality and morbidity.[46] This measure is sensitive to changes in health both among the well and the ill, and increasingly is being used in cost-utility studies.

The calculation of years of healthy life (quality-adjusted life years) requires two sets of data. First, a life table of the population (as is used to calculate life expectancy) is needed. Life tables specify the proportion of people living and dying in each age interval and the average number of years of life remaining at the beginning of each age interval. Also needed are age-specific estimates of the well-being of a population comparable to the population represented by the life table. The measures of well-being include measures of mental, physical, and social functioning. For example, social functioning may be measured in terms of an individual's limitation in performing his or her usual social role whether this be work, school, or housework; physical functioning may be measured in terms of being confined to bed, chair, or couch due to health reasons.

By multiplying the measure of well-being by the number years of life remaining at each age interval, an estimate of the years of healthy life for a population can be derived. The baseline estimates are based on data from the 1979 and 1980 National Health Interview Survey, which covers the civilian non-institutionalized population, and on other data representing institutionalized populations in the United States. The Quality of Well-Being Scale was used as the model for developing national estimates of well-being.

In 1980, life expectancy at birth for the U.S. population was 73.7 years. This implies that everyone lived in a state of full functioning throughout the duration. In reality, people have various acute and chronic illness episodes at various times during their lifetimes which are not reflected in a measure that is only based on mortality. Accounting for these episodes yields 62 years of healthy life for the total population. For blacks, a life expectancy at birth of 68 years translates to 56 years of healthy life. For Hispanics, a life expectancy at birth of about 75 years translates to 62 years of healthy life. While people aged 65 and older have 16.4 years of life remaining on average, they have about 12 years of healthy life remaining.

Targets for the year 2000 were estimated by modeling the effects that changes in both life expectancy and well-being from 1980 to 1987 would have on the number of years of healthy life. These estimated changes in years of healthy life over a 7-year interval were used to project the number of years of healthy life that might reasonably be expected in the year 2000.

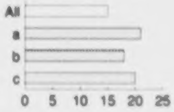
This objective seeks to increase years of healthy life for the total population by 3 years—to 65 years—by the year 2000. Although this increase will most likely be attained through a combination of decreased mortality and increased well-being, the intent of the objective is to foster health promotion and disease prevention activities directly aimed at improving the health-related quality of life of the U.S. population.

Use of the years of healthy life indicator represents an innovation in the type of measures used to portray the health of the Nation. The methods and data used for setting baseline estimates and for arriving at year 2000 targets are currently in developmental stages. Over the coming decade, limitations of both methods and data will be addressed. As a result, the estimates provided here may change. However, the tradeoffs between quantity and quality of life are becoming increasingly critical. Thus, even though the targets may be revised as a result of methodological refinements, years of healthy life is such an informative indicator that it was considered important to include in this report.

*This objective also appears as Objective 8.1 in *Educational and Community-Based Programs* and as Objective 21.1 in *Clinical Preventive Services.*

17.2 Reduce to no more than 8 percent the proportion of people who experience a limitation in major activity due to chronic conditions. (Baseline: 9.4 percent in 1988)

Special Population Targets

	Prevalence of Disability	*1988 Baseline*	*2000 Target*	*Percent Decrease*
17.2a	**Low-income people (annual family income <$10,000 in 1988)**	**18.9%**	**15%**	
17.2b	**American Indians/Alaska Natives**	**13.4%**[†]	**11%**	
17.2c	**Blacks**	**11.2%**	**9%**	

[†] *1983-85 baseline*

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

Baseline data source: National Health Interview Survey, CDC.

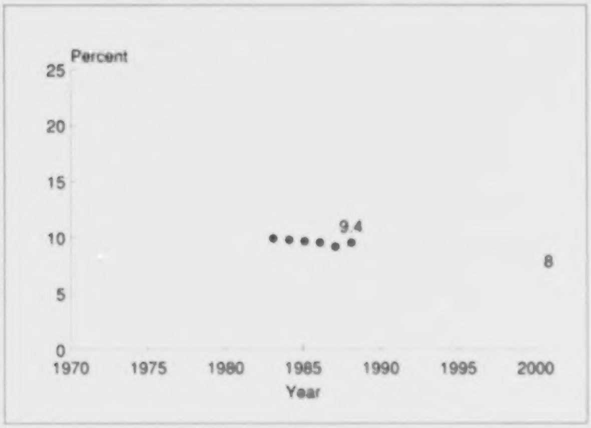


Fig. 17.2

Prevalence of limitation of major activity

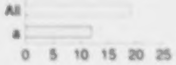
Difficulty in fulfilling one's role as an employee, student, homemaker, or independent older adult is one measure of disability. In 1988, 9.4 percent of the population suffered a limitation in major activity due to chronic conditions. About 4.0 percent were unable to carry on a major activity, such as working or keeping house, and an additional 5.4 percent were limited in the amount or kind of major activity they could perform.[90]

Limitation in major activity rises sharply with advancing age. In 1988, the prevalence of disability so defined was 3.9 and 5.9 percent for people younger than age 18 and people aged 18 through 44, respectively. However, 16.9 percent of people aged 45 through 64 and 22.6 percent of people aged 65 and older suffered a limitation in major activity. The prevalence of limitation in major activity also increases markedly as family income declines. Overall, Native Americans and blacks are more likely to report limitation in major activity than whites. For blacks, the difference is largely explained by income differences.[90] Hispanics are less likely to experience limitation in major activity: 6.6 percent in 1986-88. This may be due in part to the young age distribution of the Hispanic population. Rates for older Hispanics are slightly higher than those for whites and the population overall.

The prevalence of limitation in major activity decreased steadily from 9.9 percent in 1983 to 9.2 percent in 1987, then rose to 9.4 in 1988. The target of 8 percent, if achieved, will represent a 15-percent reduction in disability between 1988 and the year 2000.

17.3 Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities, thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

Special Population Target

	Difficulty Performing Self-Care Activities (per 1,000)	*1984-85 Baseline*	*2000 Target*	*Percent Decrease*
17.3a	**People aged 85 and older**	**371**	**325**	

Note: Personal care activities are bathing, dressing, using the toilet, getting in and out of bed or chair, and eating.

Baseline data sources: National Health Interview Survey and National Nursing Home Survey (special analysis), CDC.[57]

Activities of daily living (ADL) have been identified as a scale to measure dependencies in basic self-care and other functions important for independent living and the avoidance of institutionalization.[62] Included as a measure of dependence in physical functioning is the report of having difficulty with any of five activities vital to personal care: bathing, dressing, using the toilet, getting in and out of a bed or chair, and eating. Studies have shown that the risk for mortality and for institutionalization rises sharply for those people who report needing assistance with two or more of these activities.[21,84] Mechanical aids, architectural factors, living arrangements, and cultural values or lifestyle can significantly affect the degree to which diminished activity to perform these activities of daily living results in the need for formal care.

The proportion of the population that needs assistance with activities of daily living increases with age. The 1979-80 National Health Interview Survey Home Care Supplement found that 9 percent of people aged 65 and older needed help with ADL (walking, going outside, using the toilet, bathing, dressing, eating, and getting in and out of a bed or chair) compared to 1 percent of 18-through-64 year-olds.[70] For those aged 85 and older, the need for assistance increases markedly. Although representing only 7 percent of people aged 65 and older in 1984, this age group represented 18 to 26 percent of people dependent in personal care activities.

In 1983-85, among noninstitutionalized people aged 70 and older, the chronic conditions most frequently indicated as the main cause of need for assistance in either instrumental activities of daily living (home management activities) or activities of daily living (personal care activities) were: arthritis (18.1 percent of those needing assistance), heart disease (13.8 percent), visual impairment (10.5 percent), senility (7.2 percent), and cerebrovascular disease (6.9 percent).[70] Furthermore, people reporting limitations of activities were more likely to have multiple chronic health problems. The major causes of ADL limitation among people with some degree of disability were cerebrovascular disease and loss of function in the extremities.[70]

Only about 5 percent of older adults are in nursing homes at any given time, but 20 percent will spend time in a nursing home during their lifetime.[132] Many stays are for relatively short periods, primarily for recuperative or terminal care. Other stays can be much longer for patients with chronic conditions such as arteriosclerosis, blindness, or chronic brain syndrome, whose disabilities can no longer be cared for in the community.

The absence of a spouse or other family member who can provide support for health and maintenance requirements may be the most critical factor in the institutionalization of an older person.[132] Nearly 75 percent of nursing home residents are without a spouse, as compared to just over 40 percent of noninstitutionalized older adults.

For those unable to perform the activities of daily living, timely provision of appropriate community-based and supportive services can often delay institutionalization. Environmental adaptations and applications of assistive technology also should be considered in promoting the performance of activities of daily living and other functional abilities.

Achievement of this objective will depend partly on the success of primary prevention of these diseases and conditions, as well as delaying the onset or preventing concurrent chronic conditions that help to trigger the need for assistance. A better understanding of the impact of concurrent conditions will be needed in order to identify when and how to intervene to preserve independence.

17.4 Reduce to no more than 10 percent the proportion of people with asthma who experience activity limitation. (Baseline: Average of 19.4 percent during 1986-88)

Note: Activity limitation refers to any self-reported limitation in activity attributed to asthma.

Baseline data source: National Health Interview Survey, CDC.

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Asthma is a serious chronic condition that affects approximately 10 million Americans. Nearly 20 percent of people with asthma suffer some limitation in their daily activities due to their disease. In 1983-85, asthma accounted for 4.3 percent of the prevalence of activity limitation due to chronic conditions for people of all ages, and 18 percent of that experienced by people younger than age 18.[70] People with asthma experience well over 100 million days of restricted activity annually. Asthma is the leading cause of school absenteeism among children. Costs for asthma care exceed $4 billion a year.

Asthma is much more common among children than adults and is the most common chronic disorder among youth. In 1987, the prevalence of asthma among people younger than age 18 was 5.2 percent, compared with 3.9 percent among adults aged 65 and older. There is no difference in asthma prevalence by gender. The proportion of blacks with asthma is slightly higher than whites, 4.4 percent versus 4.0 percent, respectively. Increases in the prevalence of asthma have been reported for all age, race, and gender groups. Between 1979 and 1987, the percent of the population with asthma increased by about one-third.

In 1987, there were over 450,000 hospitalizations for which asthma was the first-listed diagnosis. Hospitalizations for asthma have been increasing among children. From 1979 to 1987, the hospital discharge rate with asthma as the first-listed diagnosis rose 43 percent among children younger than age 15, from 198 to 284 discharges per 100,000 population (see Objective 11.1 in *Environmental Health*).

In 1988, 4,580 people died from asthma in the United States. Between 1979 and 1986, the age-adjusted death rate from asthma increased from 0.9 per 100,000 to 1.2 per 100,000, a 33-percent increase. The greatest increase in asthma death rates has occurred among minorities and people aged 65 and older. Whereas blacks were twice as likely to die from asthma as their white counterparts in 1979, blacks were three times as likely to die from asthma as whites in 1987. For some age groups, the death rate is six times greater among blacks. Populations at particularly high risk for experiencing asthma-related morbidity and mortality include inner city and economically disadvantaged populations.

Reducing asthma-related morbidity and mortality will require more effective management of this condition by health care providers and by the people and families of people with asthma. Patient education programs can help to decrease asthma morbidity and mortality and enhance the quality of life for people with asthma (see Objective 17.14). To promote the use of optimal therapeutic and management strategies by health professionals, guidelines for the management of asthma are being formulated by the National Asthma Education Program. These guidelines emphasize the importance of the cooperative management of asthma by health professionals and patients.

17.5 Reduce activity limitation due to chronic back conditions to a prevalence of no more than 19 per 1,000 people. (Baseline: Average of 21.9 per 1,000 during 1986-88)

Note: Chronic back conditions include intervertebral disk disorders, curvature of the back or spine, and other self-reported chronic back impairments such as permanent stiffness or deformity of the back or repeated trouble with the back. Activity limitation refers to any self-reported limitation in activity attributed to a chronic back condition.

Baseline data source: National Health Interview Survey, CDC.

Chronic back conditions are both common and debilitating. The annual incidence of low back pain is 5 to 14 percent, and the lifetime reported prevalence ranges from 60 to 90 percent.[20,48,49,129] In 1983-85, the prevalence of chronic back conditions was 77.5 per

1,000 people, 17 per 1,000 for intervertebral disk disorders, 19.7 per 1,000 for curvature of the back or spine, and 40.8 per 1,000 for other impairments of the back.[70]

In 1983-85, chronic back conditions rivaled arthritis and heart disease as a major cause of activity limitation. Intervertebral disk disorders accounted for 4.4 percent of all activity limitation, curvature of the back or spine accounted for another 1.3 percent, and other impairments of the back accounted for 6.5 percent.[70] These translate into activity limitation rates due to chronic back conditions of 6.2 per 1,000 for intervertebral disk disorders, 1.8 per 1,000 for curvature of the back or spine, and 9.2 per 1,000 for other impairments of the back. Chronic back conditions are the most frequent cause of activity limitation in people younger than age 45[12,63,107] and account for 23 percent of the activity limitation among people aged 18 through 44.[70] Low back pain disables 5.4 million Americans and costs at least $16 billion each year.[49]

People who are overweight and people who frequently bend over or lift heavy objects are more likely to report low back injuries.[120] Occupations that require repetitive lifting, particularly in a forward bent and twisted position, place employees at especially high risk. Other risk factors for low back injury include exposure to vibration produced by vehicles or industrial machinery, prolonged vehicle driving, and certain sports activities.[48,49,64,65,129] Also associated with an increased incidence of back pain are spinal osteochondrosis, spondylolisthesis, and spinal stenosis.[13,81,111] Lumbar flexibility, trunk muscle strength, and hamstring elasticity may also predict back problems.[107] Osteoporosis increases the risk of vertebral compression, and this may account for the increase in reported low back pain symptoms in older women.[20,23] Increased age is associated with back pain.[115] Finally, people who have experienced back problems in the past are at increased risk for future injury.[29,133]

Interventions to prevent low back injury typically involve education, physical conditioning, weight loss, and/or task or environmental redesign. When feasible, redesigning the task or the environment is often the most effective intervention, especially in the work setting (see Objective 10.13 in *Occupational Safety and Health*). The severity and frequency of low back injury among those at risk also may be reduced by general improvement in physical fitness.[24] One program that combined health education with strength and endurance training found that those who achieved the highest levels of physical fitness had much lower back injury costs than did the least fit.[24] "Back school" programs that include education, lifestyle analysis, and exercise are effective in reducing employment-related injuries and relieving chronic low back pain. Reductions in the incidence of back injuries of 49 percent and 68 percent have been reported.[67,69]

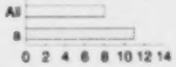
Training in proper lifting techniques has been emphasized as an important preventive measure, but the validity and practical utility of a single recommended lifting technique has been questioned. Greater success in preventing injuries is usually achieved by redesigning the task or the environment.[107]

Effective prevention of low back injury in the general population is more difficult than at the worksite because tasks and environments vary greatly. Only a few specific activities such as repetitive lifting and prolonged driving are relevant to large numbers of people. For the overall population, the emphasis should be on physical activity and dietary measures to maintain ideal body weight. Individuals at increased risk for low back injury because of past history, body configuration, or specific activity may benefit from a program of selected conditioning exercises.

17.6 Reduce significant hearing impairment to a prevalence of no more than 82 per 1,000 people. (Baseline: Average of 88.9 per 1,000 during 1986-88)

Special Population Target

	Hearing Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*	*Percent Decrease*
17.6a	**People aged 45 and older**	**203**	**180**	



Note: Hearing impairment covers the range of hearing deficits from mild loss in one ear to profound loss in both ears. Generally, inability to hear sounds at levels softer (less intense) than 20 decibels (dB) constitutes abnormal hearing. Significant hearing impairment is defined as having hearing thresholds for speech poorer than 25 dB. However, for this objective, self-reported hearing impairment (i.e., deafness in one or both ears or any trouble hearing in one or both ears) will be used as a proxy measure for significant hearing impairment.

Baseline data source: National Health Interview Survey, CDC.

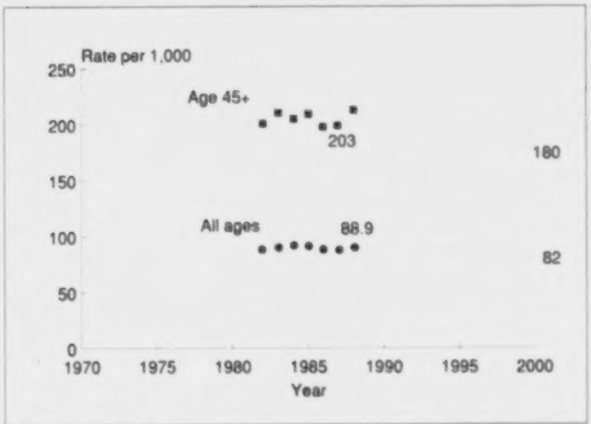


Fig. 17.6

Prevalence of hearing impairment

Disability due to hearing impairment is far reaching and can affect many aspects of life. The ramifications of auditory handicaps are seen in developmental, educational, cognitive, emotional, and social aspects of human life, and vary greatly with the type, timing, and severity of the hearing impairment, and whether or not the impairment is associated with abnormalities in any other organ system. Language delay, poor speech intelligibility, and poor understanding of spoken speech are invisible barriers that can be insurmountable for people with hearing impairments without early diagnosis and without the proper support services. Inadequate early identification, education, and vocational planning, together with indifference by the public and health care providers, limit educational and occupational opportunities for people with hearing impairment.[1,18,104] People with hearing impairment often have less desirable jobs and housing and lower incomes than those without hearing impairment.[112,125] It is estimated that the annual loss of earnings to people with hearing impairment, as a result of their disability, totals $1.25 billion.[79] Older adults with hearing impairment may suffer from reduced interpersonal communication, social isolation, depression, reduced mobility, and exacerbation of coexisting psychiatric conditions.[19,56]

Over 21 million Americans suffer some hearing impairment. In 1988, 90.8 per 1000 people had hearing impairments and 7.5 per 1,000 were deaf in both ears.[90] An estimated 1 to 2 percent of infants and children have hearing impairment. Half of these cases are congenital or acquired during infancy.[10,108,112,117] Infants at greatest risk for hearing loss include those with low birth weight, congenital infection with rubella or other infections, malformations, trauma, perinatal asphyxia, prematurity, and hospitalization in the intensive care nursery.[26,42,108,112] Fluctuating hearing loss is common among children. At any given time, about 5 to 7 percent of children have a 25 dB hearing loss, usually a self-limited complication of otitis media with middle ear effusion.[39] Recurrent otitis media may result in serious long-term complications.[139,140]

The development of hearing loss between adolescence and age 50 can have diverse causes (e.g., Meniere's disease, otosclerosis, genetic conditions, head trauma, ototoxicity), but noise-induced hearing loss accounts for the major proportion of hearing impairment among people between the ages of 35 and 65. More than 5 million Americans are at increased risk for hearing impairment due to occupational exposure to hazardous noise levels (e.g., factory, maintenance, and farm workers).[105] Even by age 18, children have been exposed to sufficient noise—lawn mowing machines, amplified music, motorcycles, snow mobiles, firecrackers, cap guns, and rifle fire in ROTC programs—to affect their high frequency hearing significantly.[14,37]

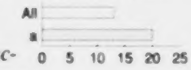
Presbycusis, the hearing loss that occurs with aging, becomes increasingly common after age 50. Hearing impairment is reported by 23 percent of people aged 65 through 74, 33 percent of people aged 75 through 84, and 48 percent of people aged 85 and older.[89] These figures are thought to be underestimates. Furthermore, the presence of coexisting visual problems, so prevalent among older adults, impairs the ability to use visual cues for speechreading and systems to augment hearing, and further exacerbate the limitations resulting from hearing impairment in older adults.

Hearing impairment due to a number of conditions can be prevented or delayed in onset. Noise-induced hearing loss is often preventable. Some congenital hearing impairments and many of those acquired during infancy are also preventable. In children, hearing loss due to chronic otitis media and diseases like meningitis can be reduced through better primary care and the use of new vaccines, such as that for Hemophilus influenza (Hib). Even age-related hearing changes may not be related to structure deterioration as much as they reflect overexposure in industrialized societies to environmental noise and other ototoxic agents.

Early detection and intervention are critical in reducing functional limitation and disability due to hearing impairment. Early detection of hearing impairment in infants is particularly important (see Objectives 17.15 and 17.16). Older adults are also likely to benefit from evaluation (see Objective 17.17). Once detected, auditory thresholds in people with hearing impairment can be improved through electro-acoustic amplification with hearing aids and frequency modulation radio devices. Communication skills can be improved with auditory and speech and language training (known as aural rehabilitation). Other assistive listening, alerting, or caption decoder devices, like closed captioned television decoders, are available for improving communicative competence.

17.7 Reduce significant visual impairment to a prevalence of no more than 30 per 1,000 people. (Baseline: Average of 34.5 per 1,000 during 1986-88)

Special Population Target

	Visual Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*	*Percent Decrease*
17.7a	**People aged 65 and older**	**87.7**	**70**	

Note: Significant visual impairment is generally defined as a permanent reduction in visual acuity and/or field of vision which is not correctable with eyeglasses or contact lenses. Severe visual impairment is defined as inability to read ordinary newsprint even with corrective lenses. For this objective, self-reported blindness in one or both eyes and other self-reported visual impairments (i.e., any trouble seeing with one or both eyes even when wearing glasses or colorblindness) will be used as a proxy measure for significant visual impairment.

Baseline data source: National Health Interview Survey, CDC.

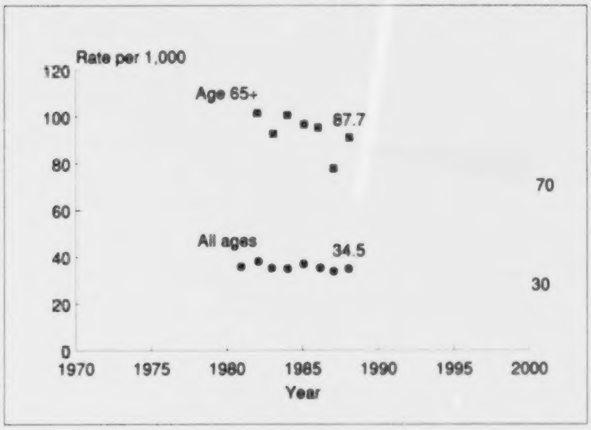


Fig. 17.7
Prevalence of visual impairment

Vision is the most highly developed human sense, and its loss or impairment can have devastating effects on physical, emotional, and social well-being. Particularly in a modern technological society, vision is the most important source of information for coping with the intricacies of daily life. In a world where printed words and televised images convey knowledge, where transportation systems are mechanized and complex, and where a vast number of instruments and tools are required for the performance of many complicated tasks, good vision is of primary importance. According to a 1988 Gallup survey, blindness is the disability that Americans most fear.[50] Blindness ranked fourth after AIDS, cancer, and Alzheimer's disease as "the worst disease or ailment."

Though seldom fatal, eye diseases and vision disorders cause suffering, disability, and loss of productivity for millions of people. In the United States, 8 to 10 million people suffer from visual impairment that cannot be corrected by eyeglasses or contact lenses.[90] Of these, 2 million people are so severely impaired that they cannot read ordinary newsprint. This includes approximately 800,000 who are legally blind, usually defined as having vision of 20/200 or less, even when wearing corrective lenses, or having a field of vision of 20 degrees or less. In addition, roughly 6 million people have low-vision, a visual acuity of 20/70 or worse, or visual field (peripheral vision) restriction that cannot be helped with standard eyeglasses or contact lenses. Added to the physical and emotional pain and hardship from visual disorders is a staggering economic burden. The National Eye Institute estimates that visual disorders and blindness cost the Nation more than $16 billion annually in direct medical care and indirect costs such as days lost from work.

In 1988, the prevalence of visual impairments was 35.7 per 1,000.[90] More than half of all visual impairment occurs in people aged 65 and older, and nearly one-third of all visits to physicians' offices for medical eye care in the United States are made by people aged 65 and older. Nearly 13 percent of Americans aged 65 and older have some form of visual impairment, and almost 8 percent suffer from severe impairment: blindness in both eyes or inability to read newsprint even with glasses.[101] Eye disorders are outranked only by arthritis and cardiovascular diseases as a leading cause of activity limitation among people aged 65 and older.[70]

Diabetic retinopathy is the leading cause of new cases of blindness among people aged 20 through 44. Among people aged 45 through 74, it is the second leading cause. Early detection and laser photocoagulation treatment of diabetic retinopathy can prevent 60 percent of diabetes-related blindness or severe visual loss (see Objective 17.10).

Glaucoma, is a leading cause of blindness, affecting nearly 2 million Americans.[90] Of the various forms of glaucoma (e.g., congenital, open-angle, closed-angle, secondary), open-angle glaucoma is the most common (90 percent of cases) and insidious form. Open-angle glaucoma usually progresses in the absence of symptoms until irreversible visual field loss occurs.[92] Over the course of 20 years, blindness develops in as many as 75 percent of people with severe disease.[52] Glaucoma occurs in less than 1 percent of people under age 70, but the prevalence is 2 to 4 percent in those over age 75.[110] Among blacks, a population at increased risk for the disease, glaucoma is the leading cause of blindness.[75] In addition to age and race, other risk factors for glaucoma include diabetes mellitus, myopia, and a family history of glaucoma.[41,75] Early detection of glaucoma is essential to instituting treatment that will sharply reduce the risk of severe visual loss.

Cataract is an opacity in the eye's normally clear lens that interferes with vision. It is a common blinding eye condition, accounting for about 15 percent of blindness. At present, most cataract is believed to be an unavoidable and frequent accompaniment to advancing age, although there are types of cataract that may appear at any age due to diabetes or other metabolic disorders, or toxic environmental agents, such as steroids and other drugs, and radiation. Surgical removal of the opaque lens and its replacement with an external or implanted artificial substitute is the only effective treatment for cataract. In 1987, Medicare paid for 1 million cataract surgery procedures at a cost in excess of $2 billion.

An estimated 1.3 million people suffer from an eye injury each year. Approximately 1,000 per day or about 350,000 per year occur on the job. Over 100,000 of the injuries are permanently disabling. Yet, it is estimated that over 9 out of 10 injuries could have been prevented if appropriate eye safety practices and protective eyewear had been used. In addition, 160,000 school-aged children suffer eye injuries and 100,000 product-related eye injuries occur in the home.

About 2 to 5 percent of American children suffer from amblyopia (lazy eye), anisometropia (unequal refractive error), and strabismus (ocular misalignment), and nearly 20 percent have simple refractive errors by age 16.[2,39,43,119] Amblyopia, anisometropia, and strabismus usually develop between infancy and ages 5 to 7.[39] As normal vision from birth is necessary for proper eye development, failure to treat amblyopia, anisometropia, and strabismus before school age may result in irreversible visual deficits, permanent amblyopia, loss of depth perception and binocularity, cosmetic defects, and educational and occupational restrictions.[2,3,119] Refractive errors such as myopia become common during school age. There is uncertainty whether uncorrected refractive errors cause diminished academic performance among schoolchildren.

Early detection and treatment of vision disorders in infants and young children improve the prospects for normal eye development (see Objective 17.15). Vision examination may also be beneficial for older adults (see Objective 17.17). Finally, many optical devices are available to assist people with low-vision whose visual impairment cannot be corrected by glasses or contact lenses. These range from large-print books and extra-dark felt-tipped pens to magnifiers and telescopic lenses to sophisticated electronic reading systems and computer software that can enlarge print up to 60 times normal size.

17.8* Reduce the prevalence of serious mental retardation in school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

Note: Serious mental retardation is defined as an Intelligence Quotient (I.Q.) less than 50. This includes individuals defined by the American Association of Mental Retardation as profoundly retarded (I.Q. of 20 or less), severely retarded (I.Q. of 21-35), and moderately retarded (I.Q. of 36-50).

Baseline data source: Metropolitan Atlanta Developmental Disabilities Study, CDC.

More than 1,200,000 people in the noninstitutionalized population have mental retardation and 250,472 people with mental retardation lived in intermediate care facilities for the mentally retarded in 1986.[123] In 1983-85, the reported prevalence of mental retardation in the noninstitutionalized population was 4.7 per 1,000 people and mental retardation accounted for 2.9 percent of the activity limitation experienced.[70] Eighty-four percent of people with mental retardation had limitation in major activity, and 20 percent needed help in basic life activities.

In 1985-87, among school-aged children, the race-adjusted prevalence of mental retardation (I.Q. less than 70) was estimated to be 8.4 per 1,000 based on a study of 10-year-old children, the Metropolitan Atlanta Developmental Disabilities Study. The estimated rate of serious mental retardation (I.Q. less than 50) was 2.7 per 1,000 children.

A 25-percent reduction in the prevalence of serious mental retardation (I.Q. less than 50) among school-aged children is attainable with current technology. There are two major approaches. The first reduces the proportion of children with I.Q.s under 50 among children with disorders known to be associated with serious mental retardation. For example, the proportion of children with Down Syndrome with I.Q.s greater than 50 has increased in recent years presumably because of family-centered early intervention. Similarly, mental retardation has been prevented in children with phenylketonuria and hypothyroidism through screening and treatment programs (see Objective 14.15 in *Maternal and Infant Health*).

The second approach reduces the incidence of clinical disorders that are associated with mental retardation. There are important opportunities to reduce the incidence of the following five clinical disorders which account for more than half of serious mental retardation: fetal alcohol syndrome, fragile X syndrome, Down Syndrome, traumatic brain injury, and psychosocial disadvantage.

Mental retardation is associated with maternal use of alcohol in early pregnancy, especially heavy use. In a study of middle class pregnancies, infants born to mothers who reported using 2 or more drinks a day had, on average, a 7 point decrement in I.Q. at age 7 years.[126] Early intrauterine alcohol exposure is also associated with fetal alcohol syndrome (FAS). The prevalence of FAS is about 1.5 per 1,000 live births and about one-third of children with this disorder have mental retardation with I.Q. less than 70. Preventive interventions to reduce the prevalence of serious mental retardation associated with maternal heavy alcohol use include: (1) health education to increase awareness of the hazard of maternal alcohol use, (2) identification and treatment of alcohol abuse or addiction prior to conception or in early pregnancy, (3) early educational intervention for children with FAS, and (4) intervention by the courts to take custody of children. (See Objectives 14.4 and 14.10 in *Maternal and Infant Health* and Objective 4.19 in *Alcohol and Other Drugs*.)

The birth incidence of fragile X syndrome among males is estimated to be between 0.5 and 1 per 1,000 live births. More widespread use of diagnostic studies to identify families in which fragile X syndrome occurs can reduce this incidence.

The maternal age distribution of births is a very powerful predictor of Down Syndrome births. The birth incidence of Down Syndrome was over 2 per 1,000 live births in the 1920s and is now about 1 per 1,000. This 50-percent reduction in Down Syndrome rates occurred because the proportion of live births to women aged 35 and older decreased from over 15 percent to 5 percent during this interval. Continuation of the decreasing trend in Down Syndrome births is expected in the next decade as a result of a further reduction in the proportion of births to older women as the baby boomers born in the 1950s move beyond their childbearing years.

Infants with very low birth weight have a higher than average risk of having mental retardation. Interventions that reduce the proportion of infants with birth weights less than 1,500 grams will also contribute to the prevention of serious mental retardation (see Objective 14.5 in *Maternal and Infant Health*).

There is great potential for reducing mental retardation due to psychosocial deprivation. The intellectual enrichment provided by high quality preschool programs is thought an essential component of early educational interventions that reduce the risk of mental retardation among children born in families with psychosocial deprivation (see Objective 8.3 in *Educational and Community-Based Programs*).

Mental retardation in children due to traumatic brain injury can be reduced by measures to reduce motor vehicle, bicycle, and other injuries. The average annual incidence of traumatic brain injury is 2.3 per 1,000 children.[68] Given age-specific incidences, a child has a 40 per 1,000 risk of sustaining traumatic brain injury over the course of childhood and adolescence. Although the majority of these children do not have mental retardation, prevention of underlying injuries can help to reduce the prevalence of mental retardation (see Objectives 9.9, 9.12, 9.13, and 9.14 in *Unintentional Injuries*).

As the number of children with HIV infection grows, the virus is expected to become the leading infectious cause of mental retardation and developmental disability in children. The prevalence of central nervous system dysfunction in children with HIV infection ranges from 78 to 93 percent.[16] Neurologic effects include: global developmental delay, encephalopathy, acquired microcephaly, cognitive disorders, loss of previously achieved milestones, spasticity, motor function abnormalities, and sensory impairment.[45,130] Intervention programs for women who are intravenous drug users or the sexual partners of intravenous drug users can help to slow and eventually reverse the increasing incidence of HIV infection among infants (see Objectives 18.2, 18.5, and 18.13 in *HIV Infection*).

Reducing the incidence and ultimately the prevalence of serious mental retardation will require increased education of health professionals regarding genetic and environmental contributions to birth defects and mental retardation. In order for many interventions to be effective, they must be applied prior to conception, a time at which adult medical specialists, such as family physicians and internists, are the principle care providers. Primary providers of obstetric services also need to become better informed about the importance of comprehensive preconception and prenatal risk assessment and counseling services. Couples identified to be at increased risk should be referred to genetic health care specialists (e.g., clinical/medical geneticists, clinical nurse specialists in genetics, and genetic counselors, teratogen information services or high risk obstetric services). Increased education of the public about these issues will be necessary to reduce the number of individuals exposed to avoidable hazards during pregnancies.

*This objective also appears as Objective 11.2 in *Environmental Health.*

Diabetes

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people. (Age-adjusted baseline: 38 per 100,000 in 1986)

Special Population Targets

	Diabetes-Related Deaths (per 100,000)	*1986 Baseline*	*2000 Target*	*Percent Decrease*
17.9a	**Blacks**	65	58	
17.9b	**American Indians/Alaska Natives**	54	48	

Note: Diabetes-related deaths refer to deaths from diabetes as an underlying or contributing cause.

Baseline data source: National Vital Statistics System, CDC.

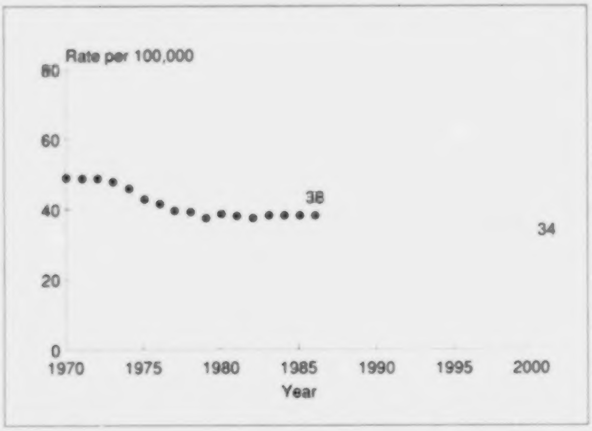


Fig. 17.9

Diabetes-related death rate

In 1987, diabetes was the sixth leading underlying cause of death due to disease. It was the underlying cause of death for more than 37,000 Americans and contributed to over 100,000 additional deaths. Although diabetes mortality declined in the 1970s, the trend has been flat during the 1980s.

Cardiovascular disease is the leading cause of death among people with diabetes, accounting for over half of all deaths. Preventing cardiovascular disease by reducing cardiovascular disease risk factors could have a major effect on morbidity and mortality from diabetes mellitus. The National Long-Range Plan to Combat Diabetes calls for decreases among people with diabetes in the prevalence of uncontrolled hypertension from 50 percent to 25 percent, cigarette smoking from 27 percent to 10 percent, and elevated cholesterol (greater than 240 mg/dL) from an estimated 30 percent to 20 percent.[95] Reductions in these risk factors could decrease cardiovascular disease risk by more than one-third. Because effects may not be independent and because risk factor reductions will not immediately reduce mortality, a reduction of about 20 percent in cardiovascular disease mortality among people with diabetes by the year 2000 may be more realistic. Since cardiovascular deaths account for about half of deaths among people with diabetes, the impact on total mortality would be a 10-percent reduction. Some additional reduction in the mortality rate may also result from decreases in diabetic ketoacidosis (DKA) and end-stage renal disease (ESRD) (see Objective 17.10). Achieving the proposed mortality reductions among high-risk populations, including blacks and Hispanics with diabetes, will require targeted efforts to reduce cardiovascular risk factors among these groups.

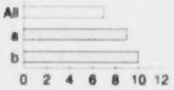
17.10 Reduce the most severe complications of diabetes as follows:

Complications Among People With Diabetes	*1988 Baseline*	*2000 Target*
End-stage renal disease	**1.5/1,000**[†]	**1.4/1,000**
Blindness	**2.2/1,000**	**1.4/1,000**
Lower extremity amputation	**8.2/1,000**[†]	**4.9/1,000**
Perinatal mortality[‡]	**5%**	**2%**
Major congenital malformations[‡]	**8%**	**4%**

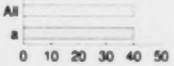
[†] *1987 baseline*

[‡] *Among infants of women with established diabetes*

Special Population Targets for ESRD

	ESRD Due to Diabetes (per 1,000)	*1983-86 Baseline*	*2000 Target*	*Percent Decrease*
17.10a	**Blacks with diabetes**	**2.2**	**2**	
17.10b	**American Indians/Alaska Natives with diabetes**	**2.1**	**1.9**	

Special Population Target for Amputations

	Lower Extremity Amputations Due to Diabetes (per 1,000)	*1984-87 Baseline*	*2000 Target*	*Percent Decrease*
17.10c	**Blacks with diabetes**	**10.2**	**6.1**	

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

Baseline data sources: For ESRD, Program Management and Medical Information System, Health Care Financing Administration; for blindness, Massachusetts State Commission for the Blind; for amputation, special analysis of National Hospital Discharge Survey and National Health Interview Survey, CDC; for perinatal mortality and congenital malformations, clinical series and selected States' data.

Individuals with diabetes face not only a shortened life span but also the probability of multiple acute and chronic complications, including chronic progressive renal failure, blindness, and lower extremity amputations. In 1987, diabetes accounted for approximately 10,000 new cases of end-stage renal disease (ESRD) or progressive chronic kidney failure in the United States. In 1987, 30 percent of new ESRD cases were the result of diabetes, 26 percent were due to hypertension, 19 percent were due to glomerulonephritis, 13 percent were from other causes, and 12 percent were of unknown origin. (See Objective 15.3 in *Heart Disease and Stroke*.) Among people with diabetes, in 1986, the rates of new cases of ESRD requiring maintenance dialysis or kidney transplantation were 1.3 per 1,000 whites with diabetes, 2.2 per 1,000 blacks with diabetes, and 2.1 per 1,000 Native Americans with diabetes (1983-86). Data are unavailable for Hispanics and Asians and Pacific Islanders. Since 1983, the incidence of ESRD attributable to diabetes has been increasing about 10 percent per year. If the current trend continues, the incidence rate would more than double by the year 2000. Progressive chronic kidney failure secondary to primary hypertension or diabetes mellitus may be slowed by lowering high blood pressure. A few clinical studies suggest that aggressive control of blood pressure (particularly in IDDM) can reduce the risk of ESRD by 50 percent.[98] If uncontrolled hypertension among people with diabetes is reduced by 50 percent, about 25 percent of ESRD due to diabetes could be prevented. Blood pressure control alone, however, may not be sufficient to halt the trend of increasing ESRD incidence rates. Investigations into the effectiveness of tight glucose control, low protein diet, and specific pharmacological agents should yield new intervention strategies. These should be widely applied as soon as shown to be effective. Preventive interventions should target blacks and other high-risk minority groups.

Diabetic retinopathy is the most common eye complication of diabetes and is related to the duration and type of diabetes. An estimated 40 percent of those having Type I diabetes for less than 10 years, and 95 percent of those with the disease for more than 15 years, develop retinopathy. For those with Type II diabetes, the equivalent prevalences are 25 percent and 50 percent, respectively. Diabetic retinopathy is the leading cause of new cases of blindness among people aged 20 through 44. Among people aged 45 through 74, it is the second leading cause of blindness. Clinical trials have demonstrated that approximately 60 percent of diabetes-related blindness can be prevented with early detection and laser photocoagulation treatment of diabetic retinopathy. Such treatment is widely available but underused. Data from the Centers for Disease Control (CDC) Diabetes Control Program indicate that only 75 percent of people who need treatment initiate treatment. With greater public and professional awareness and higher rates of early intervention, the incidence of diabetes-related blindness could be decreased by 45 percent.

Approximately 50,000, or half of all nontraumatic amputations in the United States, occur in people with diabetes. Half of all lower extremity amputations can be prevented through proper foot care and by reducing risk factors such as hyperglycemia, cigarette smoking, and high blood pressure. To achieve the targeted 40-percent reduction in lower extremity amputations, at least 80 percent of people with diabetes at high risk for lower extremity amputations must receive effective clinical management and foot care.

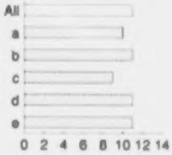
Women with diabetes have increased pregnancy complications and their babies are more likely to die at birth than women without diabetes. Infants born to women with diabetes have a threefold higher frequency of birth defects and a fivefold increase in other complications requiring intensive medical care in the early days of life. Whereas the rate of major congenital malformations for all women is about 2.5 percent, the rate among women with established diabetes is 8 percent. Strict glucose control before conception and throughout gestation coupled with high risk pregnancy management can be effective in reducing adverse outcomes among offspring of women with diabetes to about the level of the overall population. Therefore, reproductive-age women with established diabetes should receive prepregnancy counseling and should strive to strictly control their blood glucose prior to and after conception. Pregnant diabetic women also should be under the care of specialists and should deliver in hospitals that are equipped to take care of high-risk newborns. If 75 percent of women with established diabetes receive effective care, the rate of major congenital malformations should decrease to 4 percent.

17.11 Reduce diabetes to an incidence of no more than 2.5 per 1,000 people and a prevalence of no more than 25 per 1,000 people. (Baselines: 2.9 per 1,000 in 1987; 28 per 1,000 in 1987)

Special Population Targets

	Prevalence of Diabetes (per 1,000)	*1982-84 Baseline*[†]	*2000 Target*
17.11a	**American Indians/Alaska Natives**	**69**[‡]	**62**
17.11b	**Puerto Ricans**	**55**	**49**
17.11c	**Mexican Americans**	**54**	**49**
17.11d	**Cuban Americans**	**36**	**32**
17.11e	**Blacks**	**36**[§]	**32**

Percent Decrease



[†] *1982-84 baseline for people aged 20-74*

[‡] *1987 baseline for American Indians/Alaska Natives aged 15 and older*

[§] *1987 baseline for blacks of all ages*

Baseline data sources: For total population incidence and prevalence, the National Health Interview Survey, CDC; for American Indians, Indian Health Service; for Hispanics, Hispanic Health and Nutrition Examination Survey, CDC; for blacks, National Health Interview Survey, CDC.

Approximately 7 million people in the United States have been diagnosed with diabetes, and an additional 5 million may unknowingly have the disease. Each year more than 650,000 new cases of diabetes are identified. The predominant form is noninsulin-dependent diabetes mellitus (NIDDM). High risk populations for NIDDM include blacks, Hispanics, Native Americans, obese people, people with a family history of diabetes, and women with previous gestational diabetes. The prevalence of diabetes in the U.S. black population is about 50 percent higher than in non-Hispanic whites, and the occurrence in Hispanics is about double that of non-Hispanic whites. Certain American Indian tribes have the highest known prevalence of diabetes of any population in the world. Epidemiologic data on Asians and Pacific Islanders are more limited, although it appears that the prevalence of diabetes in these populations is also higher than among non-Hispanic whites in the United States.

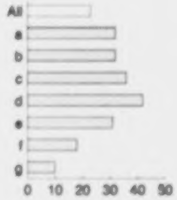
The prevention and control of overweight and obesity is of major importance in the prevention and treatment of NIDDM (see Objective 17.12). The only therapeutic intervention known to be effective in NIDDM is the maintenance of desirable body weight, according to a recent National Institutes of Health Consensus Conference on Diet and Exercise in the Management of Type II Diabetes.[94] Weight reduction ameliorates the metabolic abnormalities characteristic of the diabetic patient and may help to prevent the complications of the disease. In addition, for young adults at risk of diabetes because of family history, the institution of a weight control program may prevent the emergence of diabetes. In people aged 60 and older, increased physical activity has been shown to improve glucose tolerance specifically. (See Objective 17.13.)

Although unproven by clinical trials, primary prevention of NIDDM is likely to be effected by measures to prevent obesity and by targeting prevention efforts to people at high risk of NIDDM. Approximately half of NIDDM is thought to be the result of obesity. Since 90 percent of diabetes is NIDDM, about 45 percent or more of all diabetes mellitus can be considered preventable through control of obesity. A reduction in the prevalence of obesity of approximately 23 percent by the year 2000 has been targeted elsewhere (see Objective 17.12). Attaining this objective could result in a minimum reduction of 10 percent in the incidence of diabetes. The objective of a 15-percent decrease in diabetes incidence assumes a special focus in obesity control programs on people at high risk of NIDDM.

Risk Reduction Objectives

17.12* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*	*Percent Decrease*
17.12a	**Low-income women aged 20 and older**	**37%**	**25%**	
17.12b	**Black women aged 20 and older**	**44%**	**30%**	
17.12c	**Hispanic women aged 20 and older**		**25%**	
	Mexican-American women	39%[‡]		
	Cuban women	34%[‡]		
	Puerto Rican women	37%[‡]		
17.12d	**American Indians/Alaska Natives**	**29-75%**[§]	**30%**	
17.12e	**People with disabilities**	**36%**[+]	**25%**	
17.12f	**Women with high blood pressure**	**50%**	**41%**	
17.12g	**Men with high blood pressure**	**39%**	**35%**	

[†] *1976-80 baseline for people aged 20-74*

[‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation.[128] *BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.*

Baseline data sources: National Health and Nutrition Examination Survey (NHANES), CDC; Hispanic Health and Nutrition Examination Survey, CDC; Indian Health Service; for people with disabilities, National Health Interview Survey, CDC.

*For commentary, see Objective 2.3 in *Nutrition.* This objective also appears as Objective 1.2 in *Physical Activity and Fitness* and as Objective 15.10 in *Heart Disease and Stroke.*

17.13* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

Baseline data source: Behavioral Risk Factor Surveillance System, CDC.

*For commentary, see Objective 1.3 in *Physical Activity and Fitness*. This objective also appears as Objective 15.11 in *Heart Disease and Stroke*.

Services and Protection Objectives

17.14 Increase to at least 40 percent the proportion of people with chronic and disabling conditions who receive formal patient education including information about community and self-help resources as an integral part of the management of their condition. (Baseline data available in 1991)

Type-Specific Targets

Patient Education	*1983-84 Baseline*	*2000 Target*
17.14a People with diabetes	**32%(classes)** **68% (counseling)**	**75%**
17.14b People with asthma	**—**	**50%**

Baseline data source: For people with diabetes, Halpern 1989.

Patient education programs for people with diabetes, asthma, heart disease, impaired mobility and other chronic and disabling conditions can help to improve the efficiency and effectiveness of care, and reduce subsequent morbidity, and disability. To be effective, patient education should be provided in a manner that meets individual needs, fosters improved self-management, and facilitates prompt referral, followup, and coordination of care. Self-help and mutual aid groups, in particular, are an important source of information and social support for people with chronic conditions and their families.

For people with diabetes, studies have demonstrated that blood glucose levels can be reduced through combined patient and professional education.[134] Several studies have demonstrated reductions in morbidity after patient education.[27,28] At present, patient education is generally considered an integral aspect of patient management and a mainstay of patient self-care. It is so widely accepted as standard diabetes management that a rigorous study design that denies education to a control group would be unethical. Education programs should target specific complication prevention with a combined patient and professional education approach.

In asthma, patient education also plays a crucial role in alleviating morbidity and postponing mortality. Patient education programs for asthma have been found to be effective in developing self-management skills and reducing the number of asthma attacks, emergency room visits, hospitalizations, and days lost from work or school.[7] The National Asthma Education Program's asthma management guidelines emphasize the importance of active patient participation in the management of asthma. An informed patient who takes an active role in treatment is more likely to take preventive measures, take medications properly, recognize the signs of an attack, control an attack once it has begun, and have a crisis plan for emergencies.

Although national baseline data for this objective are unavailable, limited data are available for specific chronic conditions. A household survey in Michigan found that 68 percent of respondents with diabetes had received instruction or special counseling in diabetes and 32 percent had received instruction in a formal class.[54]

17.15 Increase to at least 80 percent the proportion of providers of primary care for children who routinely refer or screen infants and children for impairments of vision, hearing, speech and language, and assess other developmental milestones as part of well-child care. (Baseline data available in 1992)

Providers of primary care for children occupy a pivotal position regarding early identification of developmental problems.[53] If such problems can be identified early, children are more likely to make developmental progress.[22] Since one-third of all scheduled pediatric visits are for well-child care, the primary care setting is an ideal place for such screening to occur.[106] The major objectives of well-child care and regular developmental screening are: (1) prevention of disease, and (2) early detection and treatment of disease.

To be effective, developmental screening needs to: begin at an early age; be available to all children regardless of socioeconomic condition; and be conducted on a regular basis. Unfortunately, early and periodic screening of all children is not routinely occurring.[3] Although data are limited, fewer than 15 percent of all birth-to-5-year-old children receive regular screening for vision, hearing, language, and other developmental milestones. A national survey of 1,000 pediatricians revealed that 60 percent of birth to 5-year-old children receive no routine screening for vision even though such screening is very quick, simple, and inexpensive.[3] Another study demonstrated that primary care physicians identified less than 5 percent of children with speech and language disorders.[103] Finally, though mandated by law and paid for by Title XIX funds, only 40 percent of children eligible for Early Periodic Screening, Diagnosis, and Treatment (EPSDT) program services receive any level of screening.[4,86]

Normal vision from birth through ages 5 to 7 is necessary for proper eye development, development of the visual system, and cognitive development. About 2 to 5 percent of American children suffer from amblyopia (lazy eye), strabismus (ocular misalignment), and anisometropia (difference between the two eyes in nearsightedness, farsightedness, and astigmatism).[2,39,43,119] These visual problems, when untreated, can cause irreversible visual deficits, permanent amblyopia, loss of depth perception and binocularity, cosmetic defects, and educational and occupational restrictions.[2,5,119] Detection and treatment of strabismus and amblyopia by age 1 to 2 can increase the likelihood of developing normal or near-normal binocular vision and may improve fine motor skills.[43,119] Interventions for amblyopia and strabismus are considerably less effective if initiated after age 5, and such a delay increases the risk of irreversible amblyopia, ocular misalignment, and other visual deficits.[2,39] Clinical screening tests can detect these disorders earlier than parents or teachers as only half of children with ocular misalignment have a cosmetically noticeable defect.[9,43] Recently the U.S. Preventive Services Task Force recommended testing for amblyopia and strabismus for all children once before entering school, preferably at age 3 or 4.[131]

An estimated 1 to 2 percent of infants and children have hearing impairment. Half of these cases are congenital or acquired during infancy.[10,108,112,117] Left uncorrected, hearing impairment during infancy and early childhood may interfere with the development of speech and language skills (see Objective 17.15). Although the detrimental effect of

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hearing loss on language development occurs before age 3, the abnormality often is not detected until ages 2 to 6.[26,108,117,125] Therefore, screening tests have been recommended during infancy, preferably during the neonatal period, especially for high risk newborns. Most experts recommend screening infants beginning at birth. The U.S. Preventive Services Task Force recently recommended screening for hearing impairment on all high-risk neonates.[131] The American Speech-Language-Hearing Association (ASHA) recommends electrophysiologic testing between birth and 6 months of age (preferably before hospital discharge) of all infants meeting selected risk criteria.[10] A joint policy statement by ASHA, the American Academy of Otolaryngology, Head and Neck Surgery, the American Academy of Pediatrics, and the American Nurses Association is currently being developed.

Nearly 6 million children under age 18 have some form of speech or language disorder[99] and an estimated 8.5 percent of children aged 0 through 3 years have significant language delays.[36,135] Early treatment of speech and language problems can help some children improve their communication skills and avoid or reduce later language and academic problems.[99] In addition, communication disorders may be the earliest and most easily recognized symptom of other disabilities (e.g., mental retardation, cleft palate, cerebral palsy, emotional disturbances, autism, learning disabilities, attention-deficit disorders).[36,73,77,121]

In addition to screening children for impaired vision and communication disorders, routine developmental assessment of all children is an essential part of health maintenance. For children with developmental delays, the effectiveness of early intervention is well documented. Mental retardation due to psychosocial deprivation is especially amenable to intervention (see Objective 17.8). Early intervention is also effective for children with organic mental retardation, including Down syndrome, and has been shown to increase cognitive, social, and communication skills. Young children with cerebral palsy, hearing and visual impairment, and emotional disturbances also benefit from early training and habilitation.

17.16 Reduce the average age at which children with significant hearing impairment are identified to no more than 12 months. (Baseline: Estimated as 24 to 30 months in 1988)

Baseline data source: Commission on Education of the Deaf.

The future of a child born with a significant hearing impairment depends to a very large degree on early identification (i.e., audiological diagnosis before 12 months of age) followed by immediate and appropriate intervention. If hearing impaired children are not identified early, it is difficult, if not impossible, for many of them to acquire the fundamental language, social, and cognitive skills that provide the foundation for later schooling and success in society.[38,79,117,118] When early identification and intervention occurs, hearing impaired children make dramatic progress, are more successful in school, and become more productive members of society. The earlier intervention and habilitation begins, the more dramatic the benefits.[33,102]

Unfortunately, the average age at which children with significant hearing impairment (i.e., moderate to profound bilateral hearing loss) are identified in the United States is somewhere between 24 and 30 months of age.[34,35,44,47,78,85,137] This contrasts sharply with other countries such as Israel and Great Britain where the average age of identification is 7 months of age.[34] Factors which contribute to failure to identify children earlier in the United States include lack of parental awareness of the indicators of hearing loss in very young children, the "wait-and-see" attitude exhibited by many physicians when parents express concern about possible hearing impairments,[44] and the fact that only a handful of States have implemented screening programs for high-risk children.[82,83] Existing knowledge and technology provide the tools to address these obstacles and thereby reduce the average age at which hearing impaired children are identified.

17.17 Increase to at least 60 percent the proportion of providers of primary care for older adults who routinely evaluate people aged 65 and older for urinary incontinence and impairments of vision, hearing, cognition, and functional status. (Baseline data available in 1992)

In older adults, sensory deprivation due to impaired vision or hearing can lead to isolation, dependence, depression, and sometimes disorientation and confusion.[11,19,56,89,127] In addition, functional limitations, cognitive impairment, and urinary incontinence greatly increase the risk of institutionalization for older adults. In many cases, early detection and intervention can help to reduce functional limitation. Routine assessment by primary care providers can help to identify older adults who might benefit from intervention.

Vision disorders in older adults are associated with difficulties in ambulation,[89] injuries due to falls and motor vehicle accidents, diminished productivity, and loss of independence.[127] Nearly 13 percent of Americans aged 65 and older have some form of visual impairment, and almost 8 percent suffer from severe impairment: blindness in both eyes or inability to read newsprint even with glasses.[101] Many older adults are unaware of changes in their visual acuity, and up to 25 percent may be using an incorrect lens prescription.[127] Among people aged 65 through 74, a visual acuity of 20/50 or less has been measured in 11 percent of those who wear glasses and in 26 percent of those who do not.[88] Because of the high prevalence of abnormal visual acuity, and because these deficits are often uncorrected, vision screening can be beneficial for older adults. Early correction of refractive errors may help to prevent injuries and facilitate the performance of daily tasks. Early detection and treatment of glaucoma and cataracts is also important.

Older adults are also likely to benefit from screening for hearing impairments because of the prevalence of presbycusis, and because significant limitations in independent activity and functional status are more common among older adults with hearing loss.[19,56] In addition, hearing impairment in older adults is more likely to be undetected and/or inadequately treated. Although 23 to 48 percent of people over age 65 reported that they were hearing impaired in 1984, only 8 percent used a hearing aid.[89] Older people often view hearing loss as an uncorrectable consequence of aging, or they may be unaware of their impairment due to its gradual onset or coexisting cognitive deficits.[76,127] Early detection and intervention can help to reduce functional limitation and disability due to hearing impairment. Hearing aids, patient and family communication training, and environmental structuring can help to enhance the functional status and quality of life for older adults with hearing impairment.

As many as 4 million older Americans may suffer from dementia, a global impairment of cognitive function characterized by chronic progressive deterioration of memory, orientation, general intellect, specific cognitive capacities, language, and social functioning.[8,136] The prevalence of dementia is estimated to be about 5 percent in people over age 65 and rises to 20 percent by age 80.[136] Dementia results in approximately 120,000 deaths annually[61,136] and is a leading cause of institutionalization among older adults. About one-half to two-thirds of the 1.3 million American nursing home residents have some type of cognitive impairment.[15,114] The disease costs society about $30 billion annually.[55]

Some dementias are neurologic in origin, others like multi-infarct dementia are vascular, and still others have viral or other causes.[8,15] Alzheimer's disease is the leading cause of cognitive impairment, accounting for 50 to 75 percent of cases. Between 10 and 20 percent of dementias or pseudodementias are caused by drug toxicity, metabolic disorders, depression, and hyperthyroidism and are potentially reversible.[8,15,25] Between 11 and 69 percent of these patients will improve with treatment,[32,71] but the extent of reversibility may depend in part on the clinician's ability to reach a prompt diagnosis and begin treatment.[96] Although early detection is probably ineffective in preventing the neurologic consequences of irreversible dementia, such as that caused by Alzheimer's disease or multiple infarcts,[138] early treatment of secondary medical and psychiatric complications, and attention to social, psychological, and environmental needs may reduce the morbidity experienced by the patient and benefit the patient's family.[8,71,72,91]

The risk of institutionalization is also greatly increased for older adults with urinary incontinence, even though this problem often can be corrected. Avoidance of possible embarrassing incidents caused by the involuntary release of urine often limits sufferers of urinary incontinence from excursions outside the home. This limitation restricts social interactions with family and friends, further disrupting the lives of those affected. At least 10 million adult Americans are incontinent. Prevalence rises with age; 10 to 30 percent of community-dwelling older adults and at least 50 percent of all nursing home residents suffer from urinary incontinence.[97] Even though increasing age seems to predispose one to urinary incontinence, incontinence is not a normal consequence of aging. More often than not, urinary incontinence is a symptom signalling the presence of other problems rather than a disease. The greatest problem is that only half of people with incontinence report it to their physician. Increased assessment by health care professionals should help to identify more people with incontinence and allow the opportunity for significant improvement or cure. The most common treatments include pelvic muscle exercises, biofeedback, and other behavioral treatments; local and systemic drug therapies; and a variety of surgical approaches.

17.18 Increase to at least 90 percent the proportion of perimenopausal women who have been counseled about the benefits and risks of estrogen replacement therapy (combined with progestin, when appropriate) for prevention of osteoporosis. (Baseline data available in 1991)

Osteoporosis is a menopause- and advanced-age-related multifactorial and complex disorder of the skeletal system characterized by decreased bone mass which leads to increased skeletal fragility and fracturing; the bone that remains is morphologically normal. Low impact fractures in later years are linked mainly to bone loss and to falls. Gradual loss of tissue-building sex hormones, decreasing physical activity, and low calcium reserves in bone all play a causative role to a varying degree. Osteoporosis is a common condition affecting about 24 million Americans. An estimated 50 percent of women over age 45 and as many as 90 percent of women over age 75 have osteoporosis. Of these, over half will have fractures related to osteoporosis.[60,74]

Osteoporosis is the major cause of approximately 1.3 million bone fractures in the United States each year.[93] Most devastating of these are fractures of the proximal femur, more commonly known as hip fractures, which number around 250,000 each year.[51] Not only are hip fractures costly in terms of medical expenses as well as pain and suffering; they are associated with a 12 to 20 percent greater risk of dying within the year following the fracture than otherwise would be expected.[40] Although osteoporosis is usually thought of as a disease that affects older women, more and more men are living into the eighth and ninth decades of life, when they too become susceptible to osteoporosis and its associated fractures. One out of three women and one out of six men will experience a hip fracture by the time they reach age 90.[87]

In 1984, 145,000 inpatient fracture reductions were performed in American women aged 65 and older. Among people functionally independent and living at home at the time of hip fracture, 15 to 25 percent were in long-term care institutions 1 year after the fracture, while another 25 to 35 percent did not have independent mobility. The total cost of os-

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teoporosis and associated fractures was estimated to be between $7 billion and $10 billion in 1986.[109] The costs of osteoporosis to society are likely to increase by the year 2000 as the population ages. As the older adult population expands, so does the population at risk for osteoporosis-related fractures and consequent morbidity and mortality.

Estrogen replacement therapy has been shown to slow bone loss in postmenopausal women. Short-acting estrogens taken orally reduce postmenopausal bone loss in the vertebrae, hips, and wrists—the common sites of osteoporotic fractures. Epidemiologic evidence indicates that replacement estrogen therapy can reduce the incidence of hip fractures, while adequate calcium and regular exercise appear to reduce the minimum effective dose of oral estrogen (see Objective 2.8 in *Nutrition* and Objective 1.3 in *Physical Activity and Fitness*). Estrogen therapy should be initiated as soon after menopause as possible and maintained for at least 5 to 10 years. Estrogen replacement has other benefits for postmenopausal women including reduced frequency of "hot flashes," vaginal discomfort, vaginal and urinary infections, and perhaps anxiety and depression. Also, estrogen replacement may reduce cardiovascular mortality in postmenopausal women, but these benefits need to be balanced against the risks associated with estrogen use. Estrogen therapy, without a progestational agent, is associated with a significant increase in the incidence of endometrial hyperplasia and carcinoma and abnormal vaginal bleeding. Results from the Postmenopausal Estrogen/Progestin Intervention Study, initiated in 1990, should be available in the mid-1990s. This study will assess the safety of different combinations of estrogen and progestin and their different effects on bone mass, blood lipoproteins, and the endometrium in a large group of postmenopausal women. This objective may need to be modified based on the results of this study. An estimated 15 percent of postmenopausal women in the United States are currently on estrogen replacement therapy.[30]

For women at high risk for osteoporosis, bone mass measurements may provide useful information for counseling these women regarding estrogen (and progestin) therapy; however, mass screening of the population is not warranted. Women at high risk for osteoporosis are those who have had their ovaries removed prior to menopause, take corticosteroid medication chronically, require extreme immobility, suffer from anorexia nervosa, have had chronic amenorrhea, or are postmenopausal with a family history of osteoporosis. Other factors influencing the degree of risk include thinness, white ethnicity, alcohol consumption, and cigarette smoking.

While estrogen replacement therapy remains the most effective preventive intervention for postmenopausal (estrogen dependent) osteoporosis, it does not significantly reverse established osteoporosis nor is it clear that treatment is effective beyond the first decade after cessation of menses. It is also not a treatment for male osteopenia or osteoporosis which leads to increasing rates of fractures in men over age 70. A number of recent studies have investigated the efficacy of various modes of therapy for retarding or preventing bone loss in older adults of both sexes, including exercise programs and dietary interventions with calcium, fluoride and Vitamin D. Work is also continuing on determining the effects of drugs such as thiazides and diphosphone and hormones including calcitonin, parathyroid hormone, and growth factors that might lead to practical treatments of osteoporosis.

17.19 Increase to at least 75 percent the proportion of worksites with 50 or more employees that have a voluntarily established policy or program for the hiring of people with disabilities. (Baseline: 37 percent of medium and large companies in 1986)

Note: Voluntarily established policies and programs for the hiring of people with disabilities are encouraged for worksites of all sizes. This objective is limited to worksites with 50 or more employees for tracking purposes.

Baseline data source: International Center for the Disabled.

In 1985, a survey of Americans with disabilities found that two-thirds of all working-age people with disabilities are not working, even though a large majority of this group say that they would like to work.[58] People with disabilities are, therefore, much less likely to be working than any other demographic group under age 65, including black teenagers. The survey also found that work makes a vast qualitative difference in the lives of people with disabilities. Comparisons between working and nonworking people with disabilities show that those who work are more satisfied with life, much less likely to consider themselves disabled, and much less likely to say that their disability has prevented them from reaching their full abilities as a person. Working people with disabilities also are better educated and have more money than do nonworking people with disabilities. Health insurance coverage and access to worksite health promotion programs are among the other benefits of employment for people with disabilities. The challenge presented by these findings is how to induce the private and public sectors to effect policies and programs which will bring many more people with disabilities into the workforce.

In general, employers give employees with disabilities high marks as hard working, reliable and productive employees.[59] Managers also report that the cost of employing people with disabilities is not a significant barrier. But strong performance evaluations and an absence of cost barriers have not translated into widespread hiring of people with disabilities. Only 43 percent of equal employment opportunity officers say that their company has hired a person with a disability in the past year. Larger companies hire more people with disabilities than do smaller companies. Fifty-two percent of companies with at least 10,000 employees had hired people with disabilities in the preceding year. The percentage drops to 27 percent for companies with 50 to 999 employees and 16 percent for companies with 10 to 49 employees. It is not known whether the proportion of people with disabilities hired is greater among large, medium-sized or small companies.

The presence of a hiring policy for people with disabilities greatly increases the likelihood that people with disabilities will be hired. Sixty-seven percent of companies with such a hiring policy have hired people with disabilities in the past year, compared to only 42 percent of companies that do not have a policy. The active dissemination of these employment policies raises the consciousness of managers, and increases the likelihood that they will try harder to employ people with disabilities. Currently, only 37 percent of managers say that their company has established a policy or program for the hiring of people with disabilities, and these are mostly large companies.

17.20 Increase to 50 the number of States that have service systems for children with or at risk of chronic and disabling conditions, as required by Public Law 101-239. (Baseline data available in 1991)

Note: Children with or at risk of chronic and disabling conditions, often referred to as children with special health care needs, include children with psychosocial as well as physical problems. This population encompasses children with a wide variety of actual or potential disabling conditions, including children with or at risk for cerebral palsy, mental retardation, sensory deprivation, developmental disabilities, spina bifida, hemophilia, other genetic disorders, and health-related *educational and behavioral problems. Service systems for such children are organized networks of comprehensive, community-based, coordinated, and family-centered services.*

The establishment of systems of services that reflect the principles of comprehensive, community-based, coordinated, family-centered care are essential for effectively fostering and facilitating activities to: (1) avoid the initial occurrence of chronic and disabling conditions among children, (2) reverse or slow the progress of chronic and disabling conditions among children, and (3) minimize the complications and impact of chronic disabling conditions among children.[66,124] The establishment of these service systems is also essential to strengthen the ability of families to care for and cope with children with actual or potential chronic and disabling conditions, and enables children with more serious conditions to be placed in home and community-based living arrangements rather than in institutional living arrangements.[122]

Children with potential or actual chronic and disabling conditions and their families often require a range of different types of services.[100] Health activities and services, for example, are one necessary component, and should include: (1) health education and health promotion activities for children and their families, (2) preventive and primary care that includes routine screening for impairments of vision, hearing, speech and language, and assessment of physical and psychosocial milestones, (3) specialized diagnostic and therapeutic services, and (4) habilitation and rehabilitation services. Early intervention services are another necessary component as are educational, vocational, and mental health services for children, and support for their families.

Service systems should, to the extent possible, provide services in or near the home communities of these children. Community-based services enhance the ability of families to care for children at home, thereby promoting a normal pattern of living.

Service systems should provide coordination to overcome gaps and duplications in services.[113] Multiple services from different providers affiliated with different agencies, institutions, and organizations should be delivered in a complementary and consistent manner, in a timely fashion, and in proper sequences. The current fragmentation makes it difficult for children and families to obtain needed services.

Service systems should be family-centered in order to support and assist families in their natural and pivotal role as primary caretakers by involving families and professionals as partners in the care of children. Family-centered services recognize the importance of the family in the child's life and the fact that the family is constant in the child's life, whereas those providing health and other services are transitory.

Finally, service systems should include a continuum of services, starting with services for pregnant women and adolescents aimed at improving pregnancy outcomes and reducing the number of children with or at risk for chronic and disabling conditions. Strong linkages should be created between these systems and maternal health programs and services. Particular attention should be focused on programs and services for pregnant women and adolescents at high risk for physical or psychosocial problems. Models exist for providing effective preventive intervention and support services for this population.

The concept of service systems is reflected in recent Federal legislation. The Title V Maternal and Child Health Services Block Grant legislation of 1989 mandates State Programs for Children with Special Health Care Needs to promote the building of such service systems, and part H of the Education of the Handicapped Act (P.L. 99-457) establishes a discretionary program to build statewide systems for comprehensive, community-based, coordinated, family-centered services for infants and toddlers with, or at risk of, chronic and disabling conditions.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the objectives addressing diabetes and chronic disabling conditions over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated public health fields, who are needed to accomplish the practice, educational, and research aspects of the diabetes and chronic disabling conditions objectives.
- Provide sufficient, appropriate curricular content pertaining to diabetes and chronic disabling conditions in all schools and programs preparing students for careers in the health professions, including allied/associated public health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects. Curricula should include:
    - current concepts of diabetes care and management;
    - current guidelines for asthma diagnosis and management;
    - human genetics;
    - the multiple needs of children with chronic illness and developmental disabilities; and
    - the special conditions and needs of older adults and the most effective ways of preventing and managing the diseases and disabilities prevalent in the older population.
- Increase the provision of continuing education on chronic and disabling conditions by national professional associations whose members have roles in this area.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing surveys are available to track Objectives 17.2, 17.4, 17.5, 17.6, 17.7, and 17.9.

Periodic surveys and/or supplements to existing surveys can help to track Objectives 17.1, 17.3, 17.10, 17.11, 17.12, 17.13, and 17.18.

New surveillance systems are needed to track Objectives 17.8, 17.10, 17.14, 17.15, 17.16, 17.17, 17.19, and 17.20.

High Priority Needs

Disabilities

- A State-based surveillance system to monitor geographic and temporal trends in the incidence of congenital anomalies.
- A national system to monitor infant and child conditions involving congenital anomalies and genetic diseases not adequately ascertained in State-based surveillance systems.
- Surveillance of genetic diseases, including those with late onset.

- A surveillance system for monitoring the prevalence of developmental disabilities, including such conditions as mental retardation, cerebral palsy, epilepsy, visual impairment, and hearing impairment.
- A disability surveillance system to monitor the incidence and prevalence of secondary pathologic conditions, impairments, functional limitations, and disabilities among individuals with primary disabilities.

Diabetes

- National and State surveillance systems that can monitor diabetes prevalence, complications, and mortality and the major risk factors related to diabetic morbidity and mortality.
- Racial and ethnic identifiers in national data bases and statistically reliable samples of high-risk minority populations in national surveys.
- More detailed information on race and ethnicity recorded on hospital discharge abstracts and ESRD treatment forms.
- Improved diabetes reporting on birth certificates to monitor reproductive and birth outcomes among women with diabetes.

Asthma

- National and State surveillance systems to monitor asthma prevalence and morbidity, with statistically reliable samples of high risk minority populations in national surveys.
- Mechanisms for tracking changes in patients' knowledge and management of their asthma.
- Surveys of physicians and other health professionals to assess their knowledge, attitudes, and treatment practices related to asthma.

Vision

- Prevalence and incidence of low vision.
- Mechanisms for tracking blindness in general and due to diabetes specifically.

Older Adults

- Longitudinal information.
- Linked data bases.
- Data to forecast the size and composition of populations, as well as population characteristics such as health status and needs for services.

Research Needs

Disabilities

- The epidemiology of disabilities—the distribution of disabilities within the population, especially groups with disproportionately high or low prevalence, and risk factors for limitations in human activity (e.g., disability).
- Expanded basic biomedical and social science research into causes, and methods of intervention, of disabilities.

- Research on assistive technology.
- The role that Independent Living Centers, parent support groups, and other advocacy groups can play in the prevention of secondary conditions in people with existing disabilities.

Genetic Services

- Consensus standards to assure the quality of genetic services that will be made available as the number of chromosomal, biochemical, and molecular markers for genetic disorders increases.
- Thorough consideration of the ethical issues presented by the increasing availability of screening tools for genetic conditions.

Diabetes

- Basic and clinical research to better understand the etiology and pathogenesis of diabetes and its complications.
- Research to develop optimal capabilities for the diagnosis, treatment, cure, and prevention of diabetes and its complications.

Vision

- Research on the causes of progressive cataractous changes in the lens with advancing age and studies to find antioxidants that would resist and counteract gradual oxidative changes in lens proteins, slow cataract development, and delay the need for cataract surgery.
- Research to improve the prevention, diagnosis, and treatment of retinal diseases, corneal disease, glaucoma, strabismus, and amblyopia.
- Research to develop new low vision devices to improve the vision of those visually impaired.

Hearing

- Research on the etiology, prevention, and treatment of presbycusis.
- Research to speed the development of "voice in: text-out" and other computer technology as well as alternative assistive devices such as those for tactile recognition of speech.
- Research on wearable, signal processing and/or implantable devices for people with hearing impairments, including devices for those whom the most sophisticated amplification devices are not currently effective.

Older Adults

- Research to understand aging processes and how aging is distinct from disease, in order to better understand which changes are inevitable and which are open to modification.
- Research in the areas of primary and secondary prevention for older adults to identify ways to maintain health, independence, and function into later years.
- Research to learn more about when preventive interventions can still be effective in either preventing or ameliorating the course of disease, and which outcomes have the greatest impact on functional independence and quality of life of older adults.

- Research on the etiology, prevention, and treatment of those diseases which most threaten independence, i.e., Alzheimer's disease, and how to prevent disability.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.4 Regular vigorous physical activity

Nutrition

2.7 Weight loss practices
2.8 Calcium intake
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.3 Chronic obstructive pulmonary disease

Mental Health and Mental Disorders

6.12 Mutual help clearinghouses
6.13 Clinician review of patients' mental functioning
6.14 Clinician review of children's mental functioning

Educational and Community-Based Programs

8.6 Worksite health promotion activities
8.8 Health promotion programs for older adults
8.10 Community health promotion programs

Unintentional Injuries

9.7 Hip fractures among older adults
9.10 Nonfatal spinal cord injuries
9.11 Secondary disabilities associated with head and spinal cord injuries

Occupational Safety and Health

10.3 Cumulative trauma disorders
10.7 Occupational noise exposure
10.12 Worksite health and safety programs
10.13 Worksite back injury prevention and rehabilitation programs

Environmental Health

11.1 Asthma hospitalizations
11.4 Blood lead levels

Food and Drug Safety

12.5 Linked pharmacy systems
12.6 Medication review for older patients

Maternal and Infant Health

14.4 Fetal alcohol syndrome
14.5 Low birth weight
14.10 Alcohol, tobacco, and drug use during pregnancy
14.12 Age-appropriate preconception counseling by clinicians
14.13 Counseling on detection of fetal abnormalities
14.15 Newborn screening and followup

Heart Disease and Stroke

15.1 Coronary heart disease
15.2 Stroke
15.3 End-stage renal disease

Immunization and Infectious Diseases

20.7 Bacterial meningitis

Clinical Preventive Services

21.2 Receipt of recommended services
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services

Surveillance and Data Systems

22.4 Gaps in health data

Baseline Data Source References

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Indian Health Service, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD.

International Center for the Disabled, New York, NY.

Massachusetts State Commission for the Blind, Boston, MA.

Metropolitan Atlanta Developmental Disabilities Study, Center for Environmental Health and Injury Control, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Health and Nutrition Examination Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Hospital Discharge Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Nursing Home Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Vital Statistics System, National Center for Health Statistics, Centers for Disease Control, Public Health Service, Department of Health and Human Services, Hyattsville, MD.

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HIV Infection

18

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18. HIV Infection

Introduction

The human immunodeficiency virus (HIV) epidemic is a multifaceted national and international problem. Without treatment, within 10 years of infection with HIV, about 50 percent of people develop acquired immunodeficiency syndrome (AIDS) and another 40 percent or more develop other clinical illnesses associated with HIV infection.[18] More than 115,000 cases of AIDS had been reported by the end of 1989.[3] By the end of 1993, a projected total of 390,000 to 480,000 cases of AIDS will have been diagnosed in the United States and 285,000 to 340,000 people will have died from the disease.[9] People with HIV infection can develop severe opportunistic infections, Kaposi's sarcoma, and multiple-system medical complications. Many also experience social ostracism and discrimination. Although some antimicrobial agents may extend survival, no treatment is available to prevent death among people with AIDS. AIDS has become the seventh leading cause of years of potential life lost (before age 65) in the United States,[8] and it is the leading cause of death among intravenous drug abusers and people with hemophilia.[11]

An estimated 1 million people in the United States are infected with HIV and of these at least 40,000 became infected in 1989.[9] Despite uncertainty about the incidence of HIV infection and the ultimate magnitude of the problem, HIV and AIDS are a growing threat to the health of the Nation and will continue to make major demands on health and social service systems for many decades. Annual costs of AIDS are projected to climb as high as $5 billion to $13 billion by 1992.[6] These cost estimates do not include expenditures for expanded use of specific antiviral drugs, such as zidovudine (AZT) in asymptomatic HIV infected people. Because there is no known cure for AIDS, the first priority of the public health system must be to halt the spread of HIV infection.

Since the first cases of AIDS were identified in 1981 and HIV was recognized as the etiologic agent in 1984, great strides have been made in understanding HIV infection, its clinical outcomes, and its epidemiology. Prospects for the availability of a safe and effective HIV vaccine before the year 2000 are uncertain. Vaccine development is a high priority, and experimental vaccine candidates for both infected and uninfected people are in early testing stages. Some therapeutic agents slow replication of the virus and give hope to people infected with HIV. Other drugs are successful in the treatment and the prevention of some opportunistic infections associated with AIDS.

New prevention and control strategies must be adopted nationwide. Many of the HIV-infected people in the United States are unaware that they harbor the virus. Counseling and testing are imperative to help infected people adopt behaviors that prevent them from infecting others, to prevent or reduce adverse psychological reactions, to help uninfected individuals maintain behaviors that reduce their risk of infection, to help spouses and sexual partners of infected people adopt infection-preventing behaviors, and to provide HIV infected people with early medical intervention that can prolong life.

The HIV epidemic in the United States is composed of several interrelated but separate epidemics, each with its own dynamics. The populations most affected and the resources available to treat and combat the spread of HIV differ markedly in different areas and populations. Racial and ethnic populations, especially blacks and Hispanics, have been disproportionately affected by HIV.

In addition to the challenges presented by the multiplicity of linguistic, cultural, racial, and ethnic groups, the epidemic in minority populations is complicated because many of those infected may be economically and educationally disadvantaged and underserved by the health care system. In all communities, effective plans for the prevention and control of HIV must take into account the local characteristics of the epidemic and community resources available to help those at risk. Communities therefore need to be involved in developing their own prevention programs.

The number of reported AIDS cases among Alaska Natives, Asian Americans, and Pacific Islanders is low compared to their relative population sizes. This may create opportunities to prevent transmission in these populations and to maintain low incidence rates. In addition, studies of HIV seroprevalence in these populations may reveal whether future changes in AIDS incidence may be expected.

Two important components of HIV prevention are increasing the number of people who receive HIV counseling and testing and encouraging the adoption and maintenance of low- or no-risk behaviors. New therapies have been developed that extend the life of people with AIDS and slow the progression of HIV infection to AIDS. Failure of people infected with HIV to be tested is an obstacle to preventing spread of the infection to sexual or needle-sharing partners.

People are less likely to be tested if they fear discrimination. Those with HIV infection encounter discrimination in employment, housing, schools, and medical services. Preventing or resolving discrimination, even in the health care setting, appears to require the force of law, as well as education about HIV infection with a particular emphasis on modes of HIV transmission.

Currently, a number of laws prohibit discrimination against people with HIV infection. For example, some States have extended protection for the handicapped to people with HIV infection. The reach of these State laws varies widely. State laws are most likely to address only employment or public accommodation discrimination, leaving unaddressed discrimination in other critical areas such as health care. The passage of the Americans with Disabilities Act (ADA) will help protect people with AIDS and HIV infection from discrimination and will extend this protection nationwide.

Concerted efforts by State and local health agencies and community organizations are necessary to implement effective culture- and age-specific risk reduction programs. Such programs should aim to reduce high-risk behavior for HIV infection throughout the entire population, with particular emphasis on high-risk groups such as people with large numbers of sexual partners, adolescents (both within and out of school), intravenous drug abusers and sex partners of drug abusers, men who have sex with men and their male or female partners, people who exchange sex for money or drugs, and people already infected with HIV. Adolescents and young adults are particularly at risk since many of them engage in high-risk behaviors, believing themselves to be invulnerable to infection.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

18.1 Confine annual incidence of diagnosed AIDS cases to no more than 98,000 cases. (Baseline: An estimated 44,000 to 50,000 diagnosed cases in 1989)

Special Population Targets

	Diagnosed AIDS Cases	*1989 Baseline*	*2000 Target*
18.1a	**Gay and bisexual men**	**26,000-28,000**	**48,000**
18.1b	**Blacks**	**14,000-15,000**	**37,000**
18.1c	**Hispanics**	**7,000-8,000**	**18,000**

Note: Targets for this objective are equal to upper bound estimates of the incidence of diagnosed AIDS cases projected for 1993.

Baseline data source: Center for Infectious Diseases, CDC.

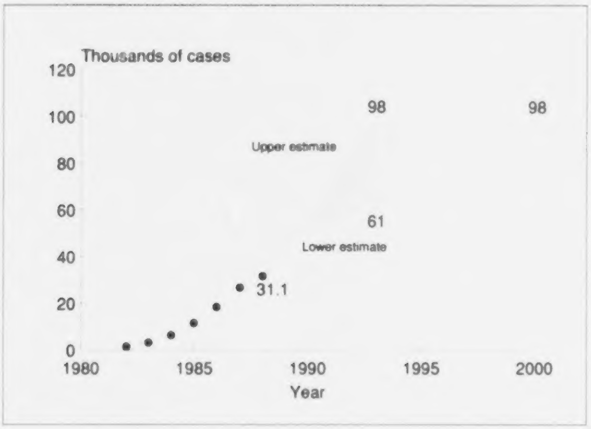

Fig. 18.1

Incidence of AIDS cases

The most important measure of progress in controlling the AIDS epidemic is the annual incidence of HIV infection. However, measuring reductions in the incidence of HIV infection would require that the same population be tested in a base period and tested again some time later to measure change. In comparison, the incidence of diagnosed AIDS cases is readily available and easy to track over time. AIDS diagnosis must be reported in all 50 States, the District of Columbia, and the U.S. Territories. A uniform case definition and case report form are used in each of these jurisdictions to report AIDS diagnosis.

Since the progression of HIV infection to AIDS is as high as 50 percent among untreated HIV-infected adults monitored for 10 years, the incidence of AIDS cases is a meaningful proxy for measuring progress in reducing the incidence of HIV infection. Various factors (e.g., age, duration of infection) that influence progression of the disease from asymptomatic HIV infection to AIDS have been recognized but require further study.

Continued progress in drug development and improvements in therapies to control the expression of HIV infection will improve ability to postpone illnesses associated with the development of AIDS. As a result, the number of HIV-infected people seeking chemoprophylaxis will grow during this decade. If chemoprophylaxis is successful, fewer people with HIV will develop AIDS; such progress will necessarily distort the measure used by this objective (incidence of AIDS cases).

The existence of medical interventions that can postpone onset of AIDS may encourage people whose behaviors put them at risk for HIV infection to seek HIV testing, creating new public health opportunities for counseling to prevent further spread and for partner notification. Currently, many people infected with HIV do not know they are infected and do not receive the counseling they need to avoid infecting others.

Although the year of peak annual incidence of AIDS cannot be predicted, prevention activities, including counseling to prevent further transmission and medical interventions to slow progression of HIV infection to AIDS, begun in the 1980s should show results in the 1990s. This objective sets as its target holding AIDS incidence to no more than the 1993 level. Achieving this target will require the concerted efforts of primary and secondary school teachers, health care providers, Federal, State, and local governments, community groups, youth-serving agencies, employers, and colleges and universities. Each has an important role to play in preventing further transmission of HIV.

18.2 Confine the prevalence of HIV infection to no more than 800 per 100,000 people. (Baseline: An estimated 400 per 100,000 in 1989)

Special Population Targets

	Estimated Prevalence of HIV Infection (per 100,000)	*1989 Baseline*	*2000 Target*
18.2a	**Homosexual men**	**2,000-42,000**[†]	**20,000**
18.2b	**Intravenous drug abusers**	**30,000-40,000**[‡]	**40,000**
18.2c	**Women giving birth to live-born infants**	**150**	**100**

[†] *Per 100,000 homosexual men aged 15 through 24 based on men tested in selected sexually transmitted disease clinics in unlinked surveys; most studies find HIV prevalence of between 2,000 and 21,000 per 100,000*

[‡] *Per 100,000 intravenous drug abusers aged 15 through 24 in the New York city vicinity; in areas other than major metropolitan centers, infection rates in people entering selected drug treatment programs tested in unlinked surveys are often under 500 per 100,000*

Baseline data source: Center for Infectious Diseases, CDC.

Meaningful objectives to measure a change in the prevalence of HIV infection are challenging to formulate. Prevalence—the number of people with infections in a given population at a particular time—is usually expressed as a rate, such as percentage of the population infected or the number of infected people per 1,000 or 100,000 people in the population. Prevalence estimates require two pieces of information: the number of infected people and the total number of people within a given population. The true prevalence of HIV infection is difficult to estimate because it is hard to test an unbiased sample and the total size of the population group is rarely known. In addition, not only are newly infected people free of symptoms, the possibility of discrimination discourages people from participating in prevalence studies.

The Public Health Service has been able to document the magnitude of the HIV epidemic through examination of data on the prevalence of HIV infection among certain populations, using many separate surveys of childbearing women, young (aged 15 through 24) homosexual men visiting sexually transmitted disease (STD) clinics, and young (aged 15 through 24) intravenous drug abusers using drug abuse treatment facilities. These measures provide a rough indication of the prevalence of HIV infection; over time, they can describe trends among sentinel populations.

A useful proxy for measuring and tracking HIV prevalence is its prevalence among people whose behavior puts them at risk for infection. One such group is homosexual men who seek services at sexually transmitted disease clinics. Blood samples taken and analyzed in these clinics suggest that a substantial decline in the incidence of new infections in homosexual men has occurred. Recent data from the large San Francisco cohort showed almost no new infections in 1987. Considerable evidence points to reduced high-risk sexual behavior among white homosexual men, although data show some relapse to high-risk behavior in this group and continued risk-taking behavior among gay youth.[17]

Insight into the prevalence of HIV infection also may be gained through blood sampling in drug abuse treatment (mainly methadone maintenance) centers.[13] Prevalence rates as high as 7 percent of drug abusers sampled were found in one group in New York City in 1987.[12]

HIV infection among illicit drug abusers is likely to continue to increase because of continuing exchange of sex for drugs.[7] Effective programs may include comprehensive drug abuse treatment and outreach that includes information, education, and counseling to encourage entrance into drug abuse treatment programs, use of clean needles, testing for HIV infection, and the prevention of unwanted pregnancies. Programs should also target minority adult and adolescent women who are drug abusers or the sexual partners of drug abusers.

Newborn infants throughout the country are routinely screened for treatable metabolic disorders by blood samples collected shortly after birth. These samples can also be tested for the presence of HIV antibody that has been passively transferred from the mother, indicating that the mother is infected with HIV. It should be emphasized that HIV among women giving birth, not among their infants, is measured by this technique. Although reliable data on the prevalence of HIV among newborns is unavailable, an estimated 20 to 40 percent of the infants of infected mothers develop HIV infection.[16]

Most (70 percent) children with perinatally transmitted HIV come from families in which one or both parents are intravenous drug abusers. Data describing HIV infection among women giving birth to live infants (only live-born infants receive blood tests necessary to track this objective) can be used to target resources and assess the effectiveness of steps taken to prevent transmission of HIV to women of childbearing age and passively to their children. Perinatal transmission of HIV can be reduced by minimizing or eliminating risk of infection in young adults (especially women of childbearing age) and through programs that reduce drug abuse and unprotected sex among drug abusers and their partners.

Seroprevalence surveys have also been conducted on several college campuses. To avoid self-selection bias, seroprevalence was assessed through blind testing of blood specimens drawn for other purposes at college clinics. Preliminary results show only that there is HIV infection on college campuses (with a rate of approximately 200 per 100,000) and confirm that AIDS education and prevention should be targeted to this population.[1]

In the absence of national estimates of the prevalence and incidence of HIV infection based on probability samples, data from STD clinics, drug abuse treatment centers, and *ad hoc* surveys of at-risk populations will remain useful for targeting prevention resources and assessing the efficacy of prevention programs.

Risk Reduction Objectives

18.3* **Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)**

Baseline data sources: National Survey of Family Growth, CDC; National Survey of Adolescent Males.

*For commentary, see Objective 5.4 in *Family Planning*. This objective also appears as Objective 19.9 in *Sexually Transmitted Diseases*.

18.4* **Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)**

Special Population Targets

	Use of Condoms	*1988 Baseline*	*2000 Target*
18.4a	**Sexually active young women aged 15-19 (by their partners)**	26%	60%
18.4b	**Sexually active young men aged 15-19**	57%	75%
18.4c	**Intravenous drug abusers**	—	60%

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Baseline data sources: National Survey of Family Growth, CDC; National Survey of Adolescent Males.

Abstinence from sexual intercourse, monogamous sexual relations with an uninfected partner, and avoidance of intravenous drug use are the most effective means of preventing HIV infection. Proper use of condoms, reducing the number of sexual partners, and abstinence from drug abuse decrease, but do not eliminate risk of HIV infection. Even with the proper use of condoms, high risk sexual behaviors, e.g., anal intercourse, should be avoided.

Although there is no absolute guarantee that using a condom will prevent people from getting sexually transmitted diseases, including HIV, risk can be greatly reduced if condoms are used properly. Failure of condoms to prevent the transmission of disease is more often caused by improper use than by product failure in the United States,[5] where condoms must adhere to quality control standards set by the Food and Drug Administration.

To be most effective in reducing the spread of HIV, condoms and instructions for their proper use should be made more widely available through health care providers who offer services to sexually active men and women, particularly in sexually transmitted disease clinics, family planning clinics, and drug abuse treatment centers. Counselors at these facilities should become more confident in counseling patients on infection prevention and should emphasize age-appropriate assertiveness skills. Instructions in correct condom use can be obtained from *Condoms and Sexually Transmitted Diseases . . . Especially AIDS*[14] or the National AIDS Hotline, 1-800-342-AIDS. More research is also needed to better understand why some people do not use condoms so that specific steps can be taken to increase their use.

At present, no national surveys accurately measure condom use for disease prevention among the total population. Existing studies are not sufficiently detailed to describe either the proportion of people who engage in high-risk behaviors and use condoms, or the proportion of high-risk sexual encounters in which condoms are being used. This objective uses the behavior of sexually active unmarried women as a proxy measure for the behavior of people who engage in high-risk sexual activity. Women aged 15 through 44 and adolescent males aged 15 through 19 are the only age groups for whom national data are gathered on condom use. For women aged 15 through 44, the data are limited to condom use for pregnancy prevention, not disease prevention.

*For additional commentary, see Objective 19.10 in *Sexually Transmitted Diseases.*

18.5 Increase to at least 50 percent the estimated proportion of all intravenous drug abusers who are in drug abuse treatment programs. (Baseline: An estimated 11 percent of opiate abusers were in treatment in 1989)

Baseline data source: National Institute on Drug Abuse, ADAMHA.

To prevent spread of HIV infection among intravenous drug abusers and their sexual partners, it is necessary to help drug abusers stop using illicit drugs. Comprehensive drug abuse treatment programs and risk reduction programs include information, education, and counseling to reduce risk, encourage testing, and prevent unintended pregnancies. Programs should target minority adults and adolescent women who are intravenous or nonintravenous drug abusers or the sexual partners of drug abusers. Because many drug abusers will not respond to treatment by stopping all drug use, the focus must also be on drug abuse prevention and abstinence from sharing drug paraphernalia.

Many children with perinatally transmitted AIDS come from families where one or both parents are intravenous drug abusers. Pediatric HIV infection is occurring disproportionately among blacks and Hispanics; 52 percent of pediatric AIDS patients are black, 25 percent are Hispanic.[10]

18.6 Increase to at least 50 percent the estimated proportion of intravenous drug abusers not in treatment who use only uncontaminated drug paraphernalia ("works"). (Baseline: 25 to 35 percent of opiate abusers in 1989)

Baseline data source: National Institute on Drug Abuse, ADAMHA.

As noted above, to prevent spread of HIV infection among intravenous drug abusers and their sexual partners, it is necessary to help drug abusers stop using illicit drugs. For those who cannot break their addiction, efforts are needed to reduce risk without condoning drug abuse. Some programs for drug abusers have succeeded in altering needle-sharing behavior and increasing the use of bleach to disinfect works.[12,15] These successes have been tempered, however, by numerous frustrations and barriers. For example, researchers have reported that even when drug abusers adopt safer drug use practices, they do not necessarily change high-risk sexual behavior. Therefore, public health approaches must include persistent efforts to counsel drug abusers about both high-risk drug use practices and high-risk sexual activities. Special efforts may be necessary to reach people who abuse illegal stimulants and depressants, as well as steroid abusers who share injection equipment.

18.7 Reduce to no more than 1 per 250,000 units of blood and blood components the risk of transfusion-transmitted HIV infection. (Baseline: 1 per 40,000 to 150,000 units in 1989)

Baseline data source: Center for Biologic Evaluation and Research, FDA.

Efforts to prevent transfusion-associated HIV infection date from 1983, when voluntary self-exclusion of potential donors with high-risk behaviors was introduced. By mid-1985, tests to detect HIV antibodies were introduced nationwide by blood-collecting agencies. These advances have resulted in a blood supply that is among the safest in the world.

There are, however, recognized deficiencies in the ability of blood and plasma collecting facilities to educate donors about their own risk behaviors and to gain cooperation with voluntary self-deferral. Improvements in testing depend on scientific efforts to better define the time period between infection with HIV and the presence of antibodies and to narrow the interval between infection and detection of an indicator of infection.

Thorough evaluation of the effectiveness of testing programs intended to reduce the chances of HIV infection are needed.

Other options for reducing transfusion-transmitted diseases include several alternatives to donor transfusion such as preoperative autologous blood donation, hemodilution, perioperative blood salvage, and use of pharmacologic agents, recombinant hematopoietic growth factors, recombinant coagulation factors, and red cell substitutes. These alternatives, if used effectively, would also help conserve the nation's blood supply. Physician education—for residents, medical students, surgeons, anesthesiologists, obstetricians, gynecologists, medical directors of blood centers, and members of hospital transfusion committees—is an integral part of promoting appropriate use of transfusion and transfusion alternatives.

The adequacy of the blood supply is also an important issue. The number of blood screening tests performed has risen in recent years, resulting not only in a greater measure of safety from transfusion-transmitted diseases, but also an increased number of deferred donors. Seasonal and geographic shortages continue to plague the blood supply. An estimated 4 to 6 percent of people have donated blood within the previous year, although more than half of the population has ever donated.[19] If a greater percentage of the population were current donors (donated within the previous year), and if more donors would give more frequently (more than once each year), the blood supply would be improved.

Services and Protection Objectives

18.8 Increase to at least 80 percent the proportion of HIV-infected people who have been tested for HIV infection. (Baseline: An estimated 15 percent of approximately 1,000,000 HIV-infected people had been tested at publicly funded clinics, in 1989)

Baseline data source: Center for Prevention Services, CDC.

Through the expanded counseling and testing efforts necessary to achieve this objective, many people whose behavior puts them at risk for HIV infection—but who are not yet infected—will be tested, creating new opportunities to prevent the spread of HIV infection. The availability of treatments that prevent or delay development of HIV-related illnesses should be a powerful incentive for people at risk for HIV infection to be tested. Increasing the number of people who use counseling and testing services ultimately should reduce HIV transmission. Infected people can receive counseling about changing their behavior to prevent further spread of the disease and be referred for medical evaluation and treatment. Uninfected people can be counseled to change their behavior to lower their risk of acquiring the infection.

18.9* **Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)**

Special Population Target

	Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
18.9a	**Providers practicing in high incidence areas**	—	**90%**

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

Baseline data source: Lewis and Freeman 1987.

The primary purposes of counseling are to prevent further spread of HIV infection and, where possible, to slow progression of HIV to AIDS. HIV counseling can be used to (1) help uninfected individuals initiate and sustain behavioral changes that reduce their risk of infection, (2) help infected individuals adopt safe behaviors to avoid infecting others, (3) help spouses and sexual partners of infected people adopt safe behaviors, and (4) help infected people take better care of themselves.[19]

The U.S. Preventive Services Task Force[21] recommends that clinicians take a complete sexual and drug use history on all adolescent and adult patients. Sexually active patients should be advised that abstaining from sex or maintaining a mutually faithful monogamous relationship with a partner known to be uninfected with HIV or other sexually transmitted diseases are the most effective strategies for avoiding infection. Patients should also receive counseling about the indications and proper methods for using condoms and spermicides in sexual intercourse. Intravenous drug abusers should be encouraged to enroll in a drug abuse treatment program and warned against sharing drug injection equipment or using unsterilized needles and syringes.

This objective is particularly challenging. Available baseline data indicate that despite heavy media and national focus on HIV and AIDS, primary care providers are not, in general, taking a complete sexual and drug use history of their patients. Strong efforts should be made to modify primary care provider behavior, focusing programs on convincing providers that their efforts are often the key to modifying the risk behavior of their patients. The special population target is intended to focus particular attention on primary care providers in cities and States that have especially high rates of HIV infection and sexually transmitted diseases.

*This objective also appears as Objective 19.14 in *Sexually Transmitted Diseases.*

18.10 **Increase to at least 95 percent the proportion of schools that have age-appropriate HIV education curricula for students in 4th through 12th grade, preferably as part of quality school health education. (Baseline: 66 percent of school districts required HIV education but only 5 percent required HIV education in each year for 7th through 12th grade in 1989)**

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Baseline data source: General Accounting Office.

AIDS information and education programs have increased public knowledge and influenced attitudes about HIV and AIDS. However, some misinformation still persists at all levels of society. The first step toward reducing high-risk behaviors is for people to be able to use information about how HIV is transmitted to assess their own risk of becoming infected. Only when people know that they are at risk will they change their behavior.

Although intensive education has reduced high-risk sexual and drug abuse behaviors among some people, there is an urgent need to continue this trend and to ensure that low-risk behaviors are sustained. The public is generally aware of the linkage between intravenous drug abuse and HIV infection and of the risk for the spread of HIV infection from intravenous drug abusers to their sexual partners and children. Less well known is the risk of HIV infection among crack cocaine abusers, caused in part by the practice of exchanging sex for crack cocaine.

It is important to maintain and expand awareness for several reasons. First, educating children in school is a means of reaching the family members and sexual partners of intravenous drug abusers and crack cocaine abusers who are often difficult to contact through more focused outreach. Second, sexually active people should consider the possible drug-using practices of their current and potential sexual partners.

As of January 1990, only 29 States had policies regarding HIV/AIDS education; most of those States favored beginning such education before children reach the age of puberty, usually by 6th grade.[21] Ideally, HIV education would reach children before they develop patterns of high-risk sexual activity and drug abuse. School- and college- age youth, especially those in areas of high HIV incidence, should be a primary target of prevention education. To be effective, such training must be direct and unambiguous. In addition to information about transmission, HIV curricula should include training in the social and personal skills students need to resist peer pressure to participate in unhealthy sexual activity and drug abuse. For example, an effective curriculum might include the components recommended in the Centers for Disease Control's *Guidelines for Effective School Health Education to Prevent the Spread of AIDS*.[4] Special efforts will be needed to reach students who have special education needs. Optimally, HIV education should be provided as part of quality school health education. For a definition of quality school health education, see *Educational and Community-Based Programs*.

18.11 Provide HIV education for students and staff in at least 90 percent of colleges and universities. (Baseline data available in 1995)

High rates of sexually transmitted disease among students using college and university student health centers suggest that students are not practicing safe sex. For example, 40 percent of women seeking pregnancy tests at the University of Maryland student health center in 1987 tested positive for a sexually transmitted disease other than HIV.[1]

In a campus environment, many students encounter new independence, self-determination, and strong peer pressure to adopt certain behaviors. Experimentation with sex, alcohol, and drug use puts these students at risk for HIV infection. Further, students may underestimate their risk of acquiring HIV infection. Risk is heightened by beliefs by young adults that they are invincible and impervious to infection.

Colleges and universities can help prevent the spread of HIV infection by assuring that their students and staff are educated about how HIV is and is not transmitted, how to prevent transmission, and how to assess their own risk of infection accurately. In a campus community, students and faculty interact in many ways, allowing a well informed staff many opportunities to educate their students about HIV infection.

18.12 Increase to at least 90 percent the proportion of cities with populations over 100,000 that have outreach programs to contact drug abusers (particularly intravenous drug abusers) to deliver HIV risk reduction messages. (Baseline data available in 1995)

Note: HIV risk reduction messages include messages about reducing or eliminating drug use, entering drug treatment, disinfection of injection equipment if still injecting drugs, and safer sex practices.

In 1989, only an estimated 10 to 20 percent of intravenous drug abusers were in treatment programs. Community outreach to contact intravenous drug abusers who are not in treatment is an important element of comprehensive community drug programs. Settings targeted by outreach should include street areas of drug sales and use, housing projects, prostitute "strolls," medical care facilities serving intravenous drug abusers (emergency rooms and hospitals), and criminal justice facilities.

In creating outreach programs, city governments should consider involving community groups that focus on the needs and concerns of racial and ethnic groups (e.g., blacks, American Indians, Hispanics, and Asian Americans). Community groups can help city-based outreach programs to be more effective by advising the programs on cultural sensitivity, common concerns of members of particular racial or ethnic groups, and potentially effective techniques for delivering risk-reduction messages to special populations.

18.13* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

Baseline data source: State Family Planning Directors.

People with tuberculosis have higher rates of HIV infection; rates are also higher among people with sexually transmitted diseases such as gonorrhea, syphilis, and lymphogranuloma venereum than among people who do not have these conditions. In addition, neuropsychological symptoms are common among people with HIV infection. Clinics and facilities that treat HIV-correlated diseases have a unique opportunity to reach some populations who are at the highest risk for HIV infection, notably intravenous drug abusers and the partners of intravenous drug abusers. In addition, public health clinics and community health centers are the major health care access points for low-income women of childbearing age who may also be at high risk for HIV infection. All women of childbearing age with known high-risk behaviors should be routinely counseled and tested for HIV antibodies and be given contraceptive counseling as appropriate. Many groups who are at high risk are often unaware of the risk behaviors of their partners and frequently will not admit, or will underestimate, their own high-risk behaviors. Particular emphasis should be placed on training people to accurately assess their own risk of contracting HIV infection and transmitting the disease to others.

*For additional commentary, see Objective 19.11 in *Sexually Transmitted Diseases*. This objective also appears as Objective 5.11 in *Family Planning*.

18.14 Extend to all facilities where workers are at risk for occupational transmission of HIV regulations to protect workers from exposure to bloodborne infections, including HIV infection. (Baseline data available in 1992)

Note: The Occupational Safety and Health Administration (OSHA) is expected to issue regulations requiring worker protection from exposure to bloodborne infections, including HIV, during 1991. Implementation of the OSHA regulations would satisfy this objective.

Blood is the single most important source of HIV infection at the worksite. Thus, HIV infection control must focus on preventing exposures to blood. Health care and other workers should consider all patients as potentially infected with HIV and strictly follow infection control precautions.

The first of a series of recommendations related to the prevention of AIDS transmission in health care settings was presented in November 1982, before the etiologic agent of the disease was identified. Subsequent documents, including the Centers for Disease Control's *Recommendations for Prevention of HIV Transmission in Health-Care Settings*,[5] emphasized the need for precautions when handling blood and body fluids of all patients, at all times (universal precautions), to minimize the risk of HIV infection among health care workers who are at risk for occupational transmission of HIV. Implementation and worker compliance have not been uniform. One study in 6 hospital emergency departments in areas of high HIV prevalence found the rate of worker compliance with CDC recommendations for wearing gloves during emergency procedures ranging from 45 to 99 percent.

OSHA published "Notice of Proposed Rulemaking on Bloodborne Diseases" in the *Federal Register* in May 1989. Mandatory regulations resulting from OSHA's effort should be in place early in the decade and near total compliance should be possible before the year 2000.

Personnel Needs

- Health and human services providers should receive training about HIV infection, high-risk behavior, and infection control measures at least once every 3 years.

Health and human services providers frequently come in contact with people who are infected with HIV or at risk of becoming infected. Thus, they can play an important role in preventing further transmission of the disease by helping to change the behavior of people with HIV infection. Providers also frequently come in contact with people whose behavior puts them at risk of acquiring the infection. Practitioners in primary care (physicians, nurses, nurse practitioners, physician assistants), mental health, dental health, emergency medical service, law enforcement, health education, social work, and substance abuse treatment should receive HIV training that can help them (1) avoid becoming infected, (2) use effective techniques to change the behavior of HIV-infected people to prevent further transmission, and (3) change the behavior of people whose actions put them at risk of becoming infected. Providers also need to be aware of any treatments that are available that may prolong the lives of infected people.

- Providers need improved training in human sexual behavior.

Primary care providers, including physicians, nurses, nurse practitioners, and physician assistants, are frequently presented with opportunities to counsel patients about prevention of transmission of HIV. However, most primary care providers are not trained in human sexuality, although such training is common among psychiatrists and psychologists. As a result, many primary care providers are uncomfortable discussing sexual behavior with their patients. Each encounter between primary care providers and people infected with HIV and people at risk for HIV infection is an opportunity for prevention. If primary care professionals are to be fully effective in preventing the spread of HIV infection, they must know how to provide culturally relevant risk-reduction counseling. Human sexuality education should be part of curricula leading to professional degrees, as well as an integral part of continuing medical education. Curricula that address human sexual behavior should include instruction in the relationship of sexual behavior to the transmission of sexually transmitted diseases (including HIV), plus normal sexual development, the range of sexual expression, and cultural sensitivity. In 1989, 94 of 105 (84 percent) accredited medical schools reported specific instruction in sexual history taking; 83 percent reported instruction in behavioral issues related to homosexuality and intravenous drug abuse; and 74 percent reported training in other psychosocial and cultural aspects of AIDS.[2]

- Providers also need improved training in recognizing and responding to drug abuse among their patients.

Surveillance and Data Needs

Availability of Future Data

Some annual data from existing data sources are available to track Objectives 18.1, 18.2, 18.7, and 18.8.

Periodic surveys and/or supplements to existing surveys can help track Objectives 18.3, 18.4, 18.9, 18.10, 18.11, and 18.12.

New data sources are needed to track Objectives 18.5, 18.6, 18.13, and 18.14.

High Priority Needs

HIV and AIDS surveillance needs can be divided into four categories: (1) general nationwide surveillance of AIDS cases, AIDS mortality, and HIV prevalence; (2) estimates of potential exposure to the virus; (3) efficacy of new AIDS therapies; and (4) understanding why racial, ethnic, and low-income groups have higher infection rates than other groups. Most pressing is the need for a national surveillance system, with confidentiality protection, at the local, State, and national levels that can be used to monitor HIV infection and HIV-related diseases, including AIDS cases; to assess public knowledge, attitudes, and behavior; and to monitor program effectiveness.

- Our current knowledge of AIDS and HIV has led to an appreciation of the complexity of the factors that contribute to risk of infection. Data bases that can be used to estimate the number of people with high-risk behaviors should be expanded to increase understanding of both the factors that influence risk and the people who become infected.
- As experimental therapies are used more widely, surveillance to monitor changes in illness and death rates will be needed to judge the impact of therapy on the course of the HIV epidemic and progression to AIDS.
- Existing surveillance systems are already strained by additional data collection demands. As this strain threatens information quality, the ability to model the future course of the epidemic is jeopardized.

- Baseline data and epidemiologic information should be developed on nonopiate drug abusers, including intravenous, steroid, polydrug, or cocaine abusers and those whose use of nonintravenous drugs increases their risk for HIV infection (e.g., those exchanging sex for drugs).

Research Needs

In addition to the priorities of discovering a cure for AIDS and a vaccine against HIV infection, research is also needed on the social and behavioral aspects of sexual and drug use practices, especially as they differ among cultures in the United States, so that high-risk behaviors and related factors can be better understood. Such research is essential for developing effective methods for promoting safer sexual practices and abstinence from drug abuse. The most pressing needs include research on the following:

- The epidemiology of nonopiate drug abusers, both those who are intravenous polydrug or cocaine abusers and those whose use of nonintravenous drugs increases their risk for HIV infection (i.e., those exchanging sex for drugs).
- The factors leading to higher HIV prevalence among blacks and Hispanics than among whites.
- Effective means of modifying high-risk behaviors.

Related Objectives From Other Priority Areas

Alcohol and Other Drugs

4.4 Drug abuse-related emergency room visits
4.12 Access to treatment programs
4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Educational and Community-Based Programs

8.4 Quality school health education
8.10 Community health promotion programs

Diabetes and Chronic Disabling Conditions

17.14 Patient education for chronic and disabling conditions
17.19 Employment of people with disabilities
17.20 Service systems for children with or at risk of chronic or disabling conditions

Sexually Transmitted Diseases

19.1 Gonorrhea
19.2 Chlamydia
19.3 Syphilis
19.5 Genital herpes and genital warts
19.8 Repeat gonorrhea infection
19.12 Sexually transmitted disease education in schools
19.15 Partner notification of exposure to sexually transmitted disease

Clinical Preventive Services

21.2 Receipt of recommended services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

Baseline Data Source References

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Sexually Transmitted Diseases

19

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19. Sexually Transmitted Diseases

Introduction

Sexually transmitted diseases are infections spread by transfer of organisms from person to person during sexual contact. Until the 1980s, only five venereal diseases were regularly monitored. During the last several years, however, the spectrum of sexually transmitted diseases has increased dramatically in both complexity and scope; more than 50 organisms and syndromes are now recognized.[13] In addition to the traditional sexually transmitted diseases (syphilis and gonorrhea), the list now encompasses *Chlamydia trachomatis* infections, genital herpes, human papillomavirus, chancroid, genital mycoplasmas, cytomegalovirus, hepatitis B, vaginitis, enteric infections, and ectoparasitic diseases.

Most of these diseases have long been known, but many have achieved recent prominence because new diagnostic methods have helped investigators to describe their extent, method of transmission, and clinical consequences. In addition, the human immunodeficiency virus (HIV), unknown when the 1990 objectives were developed, has emerged as a major sexually transmitted disease and appropriately risen to the top of the public health agenda. Methods employed nationwide to control and prevent HIV infection will likely have a positive effect on controlling other sexually transmitted diseases.[1]

Almost 12 million cases of sexually transmitted diseases occur annually, 86 percent of them in people aged 15 through 29 years.[3] By age 21, approximately one out of every five young people has required treatment for a sexually transmitted disease.[23] Because only some teenagers are sexually active, this amounts to an effective rate of at least 25 percent among those who are.

Women and children suffer an inordinate amount of the sexually transmitted disease burden. Apart from acquired immunodeficiency syndrome (AIDS) and subsequent death, the most serious complications are pelvic inflammatory disease (PID), sterility, ectopic pregnancy, blindness, cancer associated with human papillomavirus, fetal and infant death, birth defects, and mental retardation. The medically underserved (e.g., the poor, racial and ethnic minorities) also shoulder a disproportionate share of the sexually transmitted disease problem, experiencing higher rates of disease and disability than the population as a whole. The total societal cost of sexually transmitted diseases exceeds $3.5 billion annually, with the cost of PID and PID-associated ectopic pregnancy and infertility alone exceeding $2.6 billion.[23]

The availability and quality of sexually transmitted disease services are important factors in preventing the spread of disease and complications. Unfortunately, even though progress has been made recently, many vulnerable groups are not yet being served effectively. Reaching them will require not only the services of sexually transmitted disease clinics, but also those of family planning clinics, drug treatment centers, community health centers, public and private hospitals, outpatient clinics, private physicians, diagnostic and public health laboratories, schools and other educational institutions, and social service and welfare agencies and organizations.

The year 2000 objectives to prevent and control sexually transmitted diseases are based on a number of assumptions. Biological changes in sexually transmitted organisms are likely to continue throughout the next decade. Resistance of organisms (especially *Neisseria gonorrhoea*) to treatment is expected to grow, as are viral variation and interaction among sexually transmitted diseases (e.g., between genital ulcer disease and HIV infection).[20] Despite safer sexual practices (e.g., proper use of condoms) resulting from school and mass media educational campaigns, sexually transmitted diseases among drug abusers will increase because of the continuing exchange of sex for drugs.[8]

Resources for sexually transmitted disease control (other than HIV) are expected to remain constant, while more resources will be allocated for HIV because of increased numbers of cases, deaths, and health care costs. Efforts to control sexually transmitted diseases will benefit from the increased Federal support for HIV research on sexual behavior change and effective prevention messages. States and localities will need to focus their efforts on carefully selected priorities in the face of demands for sexually transmitted disease control services beyond available resources.

Despite these challenges, the year 2000 objectives are also based on the assumption that organizations not traditionally offering services will expand services for detection, treatment, and prevention of sexually transmitted diseases. Technological advances may include new nonculture techniques to refine diagnosis and reporting of many sexually transmitted diseases, and may also give rise to new antiviral treatments and improved chemical and mechanical barriers. Price reductions are expected for hepatitis B vaccine.

Finally, microcomputer technology will be increasingly applied in sexually transmitted disease control programs. This will serve to improve surveillance systems, program management, and evaluation.

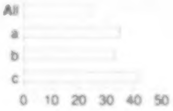
The year 2000 targets for sexually transmitted diseases are not based solely on straight line projections from recent trends in incidence. Rather, the targets are estimates from expert panels of what can be achieved given: (1) trends in the determinants of sexually transmitted diseases (demographic, behavioral, and social); (2) resources available to control sexually transmitted diseases; (3) anticipated technological advances that will help improve primary and secondary prevention; and (4) shifts in Federal, State, and local priorities on controlling specific sexually transmitted diseases. Sexually transmitted disease control efforts in the 1990s will, it is hoped, achieve reductions of all sexually transmitted diseases, rather than an accelerated decline of one infection leading to a correspondent increase in others.

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

19.1 Reduce gonorrhea to an incidence of no more than 225 cases per 100,000 people. (Baseline: 300 per 100,000 in 1989)

Special Population Targets

	Gonorrhea Incidence (per 100,000)	*1989 Baseline*	*2000 Target*	*Percent Decrease*
19.1a	**Blacks**	**1,990**	**1,300**	
19.1b	**Adolescents aged 15-19**	**1,123**	**750**	
19.1c	**Women aged 15-44**	**501**	**290**	

Baseline data source: Gonorrhea Surveillance System, CDC.

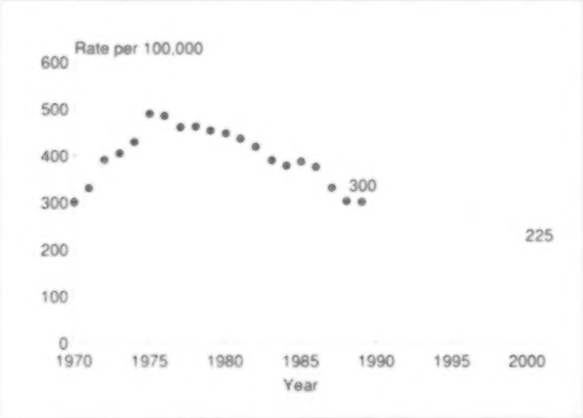


Fig. 19.1

Incidence of gonorrhea

Gonorrhea control efforts began in 1972 and have had remarkable success. Since 1981, cases of gonorrhea in males have fallen 29 percent and 24 percent in females. However, gonorrhea has not declined among racial and ethnic minorities and among teenagers. The benefit-cost ratio of gonorrhea screening and outreach efforts is estimated to be more than 2:1.[3] A major barrier to further gonorrhea reduction is the expected increase in antibiotic-resistant strains. The proportion of all gonorrhea organisms that are antibiotic-resistant grew from 0.8 percent in 1985 to 7.0 percent in 1989.[25]

Since gonorrhea continues to be the most frequently reported communicable disease in the United States, it is used as the key indicator of progress in reducing sexually transmitted diseases among populations that suffer from the highest disease rates. In the planning and implementation of sexually transmitted disease control programs, special emphasis should be given to the high-risk groups specifically targeted in the gonorrhea objective, namely, blacks, adolescents, and all women of childbearing age. No special population target has been included for Hispanics, since current gonorrhea rates are lower among Hispanics than among the total population (114 cases per 100,000 in 1989).

19.2 Reduce *Chlamydia trachomatis* infections, as measured by a decrease in the incidence of nongonococcal urethritis to no more than 170 cases per 100,000 people. (Baseline: 215 per 100,000 in 1988)

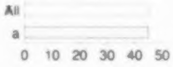
Baseline data source: National Disease and Therapeutic Index, CDC.

Chlamydia is the most common sexually transmitted bacterial pathogen in the United States, causing an estimated 4 million acute infections annually. Women and children bear an inordinate share of the burden of chlamydia infection, particularly in terms of its sequelae (acute PID, infant conjunctivitis, and infant pneumonia). Many people with uncomplicated chlamydia infection have no symptoms or signs of infection. Although chlamydia can be successfully treated with relatively inexpensive therapy, efforts to identify infected persons without symptoms have been hindered by the absence of inexpensive, widely available diagnostic tests. In addition, lack of compliance with the required 7-day treatment schedule is a major barrier to effective control.

Unlike other common sexually transmitted diseases such as gonorrhea and syphilis, no national surveillance system for chlamydia is fully functional.[24] Guidelines for chlamydia control in the United States were developed in 1985 and are being implemented.[2] Currently 42 States have at least 1 city or county sexually transmitted disease program offering comprehensive surveillance, diagnostic testing, and treatment services. Since 1985, the number of States that consider this infection a reportable disease has doubled, and the number of cases reported to the Centers for Disease Control has risen tenfold. The absence of nationwide surveillance for chlamydia has necessitated the use of nongonococcal urethritis as an indicator of progress in controlling chlamydia infections. As more States mandate reporting of chlamydia, and as use of available tests to diagnose infection becomes more widespread, it may be possible to track chlamydia itself rather than use nongonococcal urethritis as an indicator.

19.3 Reduce primary and secondary syphilis to an incidence of no more than 10 cases per 100,000 people. (Baseline: 18.1 per 100,000 in 1989)

Special Population Target

	Primary and Secondary Syphilis Incidence (per 100,000)	*1989 Baseline*	*2000 Target*	*Percent Decrease*
19.3a	**Blacks**	**118**	**65**	

Baseline data source: Syphilis Surveillance System, CDC.

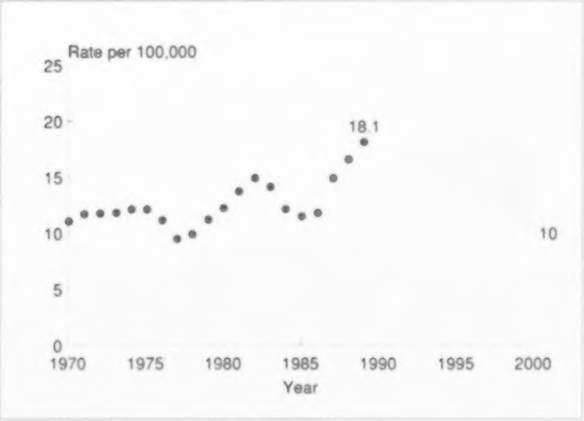


Fig. 19.3

Incidence of primary and secondary syphilis

Syphilis is the first sexually transmitted disease for which control measures were developed and tested. Since the initiation of Federal assistance for syphilis control in the 1940s, reported cases of all stages of syphilis declined from an all-time high of 575,600 in 1943 to fewer than 68,000 in 1985. In recent years, however, the number of syphilis cases has increased dramatically. Between 1986 and 1989, the number of reported cases of primary and secondary syphilis rose more than 55 percent, to the highest level in the United States since the early 1950s.

Decreases in reported syphilis noted through 1986 were caused, in part, by behavior changes among homosexual men in response to the HIV epidemic.[15] The recent increase may be due to the hard-to-reach crack cocaine users who are exchanging sex for drugs.[8] In addition, evidence increasingly confirms an association between genital ulcer disease (including infectious syphilis) and sexual HIV spread.[20] Thus, it is crucial that HIV prevention and syphilis control activities build upon and support each other.

Several supplementary approaches will help reverse the spiraling syphilis rates in the 1990s: (1) integrating syphilis control activities into community outreach efforts already underway with HIV resources; (2) training disciplines other than health professionals to recognize and appropriately refer syphilis cases; (3) concentrating syphilis control resources in the highest incidence areas; (4) expanding syphilis screening into facilities serving high-risk populations—e.g., drug treatment centers, correctional facilities, emergency rooms; and (5) applying prophylactic treatment in settings where epidemiologic indicators predict high levels of syphilis infection.

19.4 Reduce congenital syphilis to an incidence of no more than 50 cases per 100,000 live births. (Baseline: 100 per 100,000 live births in 1989)

Baseline data source: Syphilis Surveillance System, CDC.

Congenital syphilis causes fetal or perinatal death in 40 percent of the infants affected. Since 1970, the incidence of congenital syphilis has closely paralleled the incidence of primary and secondary syphilis in women. Reported cases of congenital syphilis among infants reached an all-time low of 3.1 cases per 100,000 live births in 1980, but since then have gradually increased. The rise in cases can be attributed to increases in heterosexual syphilis and improved reporting due to broader definitions. In 1989, more cases of congenital syphilis (925) were reported than in any of the previous 15 years; almost 1 of every 4,200 live-born infants in the United States had congenital syphilis.

The year 2000 congenital syphilis target takes into account the anticipated impact of the expanded case definition on the number of reported congenital syphilis cases.[27] Investigations have shown that previous surveillance underestimated the number of cases by four- to fivefold.[9] As such, the reported congenital syphilis rate of 21.4 per 100,000 live births in 1989 would be approximately 100 per 100,000 live births if adjusted for previous underreporting by use of the new definition. The objective targets a 50 percent reduction from the adjusted rate (50 per 100,000).

The Centers for Disease Control has published guidelines for the prevention and control of congenital syphilis that serve as a framework for reducing the incidence of this disease.[6] Recommended approaches include: (1) expanding syphilis screening of women of childbearing age in cities with high syphilis incidence; (2) developing community-based educational messages about syphilis and the need for prenatal care targeted to populations at risk; and (3) extending prenatal outreach services for pregnant women living in high-incidence areas.

19.5 Reduce genital herpes and genital warts, as measured by a reduction to 142,000 and 385,000, respectively, in the annual number of first-time consultations with a physician for the conditions. (Baseline: 167,000 and 451,000 in 1988)

Baseline data source: National Disease and Therapeutic Index, CDC.

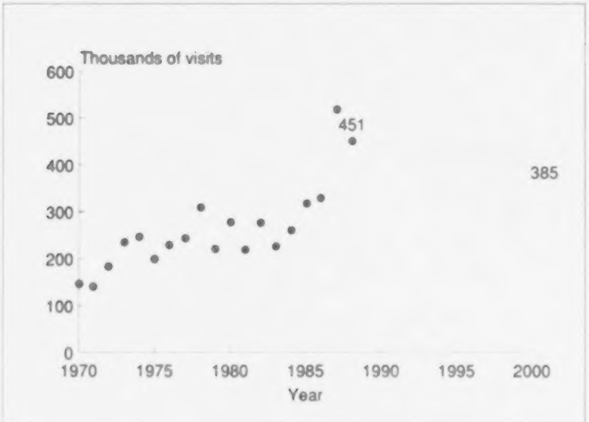


Fig. 19.5

Annual first-time physician consultations for genital warts

The estimated annual incidence of symptomatic genital herpes is 200,000 cases, with total prevalence estimates of genital herpes infection as high as 30 million cases.[14] These high levels are expected to continue, with recurrences among more people and increasingly serious complications for pregnant women and newborns. Control efforts for genital herpes are currently hampered because as many as three-fourths of genital herpes infections are transmitted by people who are unaware of their own infection and because no cure for the condition exists.[19] Progress is nevertheless expected in the development of antiviral agents capable of alleviating the disease.

Genital warts are a common sexually transmitted disease and account for approximately 5 percent of all sexually transmitted disease clinic visits. The warts are caused by human papillomavirus, which is strongly associated with cervical dysplasia and genital cancers. Genital human papillomavirus infections can also be passed to newborns who are delivered through infected birth canals. Many individuals infected with human papillomavirus are asymptomatic and thus transmit the virus unknowingly.[16] Because no culture method is available to diagnose human papillomavirus, diagnoses are made on largely clinical grounds. Genital human papillomavirus infections are difficult to treat and commonly recur. Increased research into diagnosis and treatment is essential for controlling human papillomavirus.

19.6 Reduce the incidence of pelvic inflammatory disease, as measured by a reduction in hospitalizations for pelvic inflammatory disease to no more than 250 per 100,000 women aged 15 through 44. (Baseline: 311 per 100,000 in 1988)

Baseline data source: National Hospital Discharge Survey, CDC.

Pelvic inflammatory disease is the most severe complication, with the greatest public health consequences, of lower genital tract infections such as gonorrhea and chlamydia in women. More than 1 million cases are diagnosed and treated each year, with a high percentage needing costly hospitalization. The cost of pelvic inflammatory disease and associated ectopic pregnancy and infertility alone exceeds $2.6 billion.[23]

The subclinical nature of PID results in unnecessary infertility among women whose condition goes unrecognized.[26] Specific diagnoses are difficult to make and expensive because they require laparoscopy. Effective prevention of this syndrome should be based on control of chlamydia and gonorrhea.

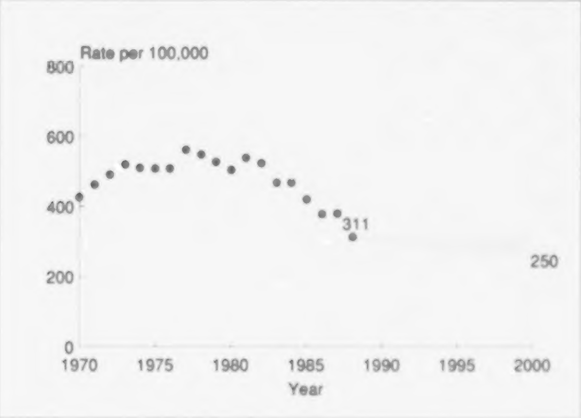


Fig. 19.6

Pelvic inflammatory disease hospitalization rate

The 1990 objective to reduce the incidence of PID to 560 cases per 100,000 women will probably not be met, although the 1990 target for gonococcal PID (60 per 100,000) will. The year 2000 objective is stated in terms of the hospitalization rate rather than total reported incidence, because data for hospitalization are more readily obtainable and more reliable than reported incidence.

19.7* Reduce sexually transmitted hepatitis B infection to no more than 30,500 cases. (Baseline: 58,300 cases in 1988)

Baseline data source: Hepatitis Surveillance System, CDC.

Nationwide, the incidence of hepatitis B has increased steadily over the last decade despite the availability of a vaccine since 1982. Vaccination programs have focused primarily on three risk groups: health care workers exposed to blood; staff and resident patients of institutions for the developmentally disabled; and staff and patients in hemodialysis units. These groups, however, account for only 5 to 10 percent of acute hepatitis B cases. The people who account for most of the cases—intravenous drug abusers, sexual partners of infected heterosexuals, and homosexual men—are not being reached effectively by current vaccination programs.

Sexually transmitted hepatitis B has been decreasing among the homosexual population primarily because of changes in their sexual behavior to prevent HIV infection.[5] In contrast, the number of hepatitis B cases among heterosexuals has been increasing and parallels the recent increases in cases of primary and secondary syphilis among the heterosexual drug-abusing population.

Although hepatitis B is the only sexually transmitted disease for which an effective vaccine is available, cost and unfounded fear of HIV infection have limited its widespread acceptance. In addition, the ability to immunize high-risk groups is compromised by several factors: the failure of both health care providers and target populations to be aware of the specific groups at high risk of infection; difficulty in identifying members of high-risk groups; problems in reaching these groups for delivery of vaccine; and the difficulties in dealing with transient at-risk populations.

Control of this virus will require active cooperation from agencies other than sexually transmitted disease clinics, such as drug treatment centers, adult immunization clinics, and private practitioners.

*This objective also appears as Objectives 20.3b and 20.3c in *Immunization and Infectious Diseases*.

19.8 Reduce the rate of repeat gonorrhea infection to no more than 15 percent within the previous year. (Baseline: 20 percent in 1988)

Note: As measured by a reduction in the proportion of gonorrhea patients who, within the previous year, were treated for a separate case of gonorrhea.

Baseline data source: STD Surveillance System, CDC.

As with other health problems, sexually transmitted diseases tend to cluster in certain core populations. In one longitudinal analysis, approximately 15 percent of infected individuals and their identified sexual partners accounted for nearly 30 percent of all gonorrhea cases.[18] Therefore, patients who have had previous infections are an important target group for reducing overall sexually transmitted disease rates and making the most cost-effective use of resources.

New methods of helping patients prevent repeat infections are required and will probably include improved psychosocial history-taking by clinicians. Possible interventions include consideration of social, economic, and environmental factors; psychosocial coping skills; referrals to community social agencies for other identified problems; and assistance in developing adequate social support systems. Gonorrhea is used as an indicator of repeat infection rates because it is the number one reportable communicable disease and is sensitive to changes in high-risk sexual behaviors. However, no uniform national data system exists to track repeat infections.

Risk Reduction Objectives

19.9* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

Baseline data sources: National Survey of Family Growth; National Survey of Adolescent Males.

*For commentary, see Objective 5.4 in *Family Planning*. This objective also appears as Objective 18.3 in *HIV Infection*.

19.10* Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)

Special Population Targets

	Use of Condoms	*1988 Baseline*	*2000 Target*
19.10a	**Sexually active young women aged 15-19 (by their partners)**	**25%**	**60%**
19.10b	**Sexually active young men aged 15-19**	**57%**	**75%**
19.10c	**Intravenous drug abusers**	**—**	**60%**

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Baseline data sources: National Survey of Family Growth, CDC; National Survey of Adolescent Males.

Abstinence or sexual intercourse with one mutually faithful uninfected partner are the only totally effective prevention strategies against sexually transmitted diseases. Proper use of condoms and reducing the number of sexual partners decrease, but do not eliminate, risk of sexually transmitted diseases. Even with the proper use of condoms, high risk sexual behaviors, e.g., anal intercourse, should be avoided. Research is needed to better understand resistance to effective condom use so that specific interventions can be implemented. Although reported condom use appears to be relatively high among sexually active adolescents, they are targeted because they are the age group at highest risk for sexually transmitted diseases, and because inculcating safer behaviors in this population will have long term positive implications for disease trends.

Failure of condoms to prevent disease is more often the fault of the user than of the product.[10] Condoms and instructions for their proper use should be made more widely available through health care providers who offer services to sexually active men and women, particularly in sexually transmitted disease clinics, family planning clinics, and drug treatment centers. These same facilities should become more assertive in counseling patients on sexually transmitted disease prevention. Instructions in correct condom use can be obtained from *Condoms and Sexually Transmitted Diseases . . . Especially AIDS*[11] or the National AIDS Hotline, 1-800-342-AIDS.

*For additional commentary, see Objective 18.4 in *HIV Infection*.

Services and Protection Objectives

19.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

Baseline data source: State Family Planning Directors.

Expansion of comprehensive sexually transmitted disease services into other public health clinics serving high-risk patients is essential if the health status objectives for this priority area are to be achieved. Although screening for certain sexually transmitted infections (e.g., gonorrhea) is routine in some public health settings, the full range of clinical services (including partner notification) are often not available. Such expansion should also take place in the private sector. This is particularly important as sexually transmitted diseases become concentrated in hard-to-reach groups, such as intravenous drug abusers.

The objective includes only selected public facilities because they are more likely to have valid data to establish baselines and assess progress. However, other relevant public and private providers should also expand their sexually transmitted disease services in the coming decade.

*This objective also appears as Objective 5.11 in *Family Planning* and Objective 18.13 in *HIV Infection*.

19.12 Include instruction in sexually transmitted disease transmission prevention in the curricula of all middle and secondary schools, preferably as part of quality school health education. (Baseline: 95 percent of schools reported offering at least one class on sexually transmitted diseases as part of their standard curricula in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Baseline data source: Alan Guttmacher Institute.

Awareness of the risks of sexual behavior and of sexually transmitted diseases is particularly crucial for adolescents. Through school-based education on family life and human sexuality, youth can be offered the knowledge and skills they need to reduce their risk of contracting sexually transmitted diseases. Because of emphasis deriving from the HIV epidemic, students are relatively well informed about prevention of HIV transmission, but are less knowledgeable about the symptoms of other sexually transmitted diseases. Programs should be modified to include sexually transmitted diseases as part of a total health education package. In addition, school curricula must build on the foundation of increased knowledge by including behaviorally based instruction (e.g., role playing) to develop skills in improving safer sexual behaviors. Optimally, sexually transmitted disease education should be provided as part of quality school health education. For a definition of quality school health education, see *Educational and Community-Based Programs*.

As messages about safer sexual behaviors have become more common, emphasis has also been placed on increasing the variety and specificity of these messages to reach different cultural and ethnic groups in more effective ways. HIV prevention messages should be expanded to include symptoms of other sexually transmitted diseases and services for diagnosing/treating them. The effect of these messages on adolescent behavior should be assessed so that the most successful messages can be more broadly distributed.

19.13 Increase to at least 90 percent the proportion of primary care providers treating patients with sexually transmitted diseases who correctly manage cases, as measured by their use of appropriate types and amounts of therapy. (Baseline: 70 percent in 1988)

Baseline data source: National Disease and Therapeutic Index, CDC.

Adequate clinical services are crucial for effectively controlling sexually transmitted diseases. Without effective treatment, opportunities for continued spread of infections are increased. Therefore, clinicians must be skilled in taking sexual histories, diagnostic procedures, and current treatment regimens. Although the proficiency of health care providers in sexually transmitted disease clinical management has improved in recent years, it remains far short of the necessary quality and scope. For example, only 10 percent of primary care providers regularly assess the sexual behaviors of their patients.[17] In addition, a sizable proportion do not prescribe the combination of antibiotics required to treat polymicrobial PID.[12]

Selected sexually transmitted diseases will be used as indicators (i.e., gonorrhea and PID) in monitoring this objective, and the definition of appropriate therapy will be based on the sexually transmitted disease treatments recommended by the Centers for Disease Control.[4] Progress toward achieving this objective will reflect improvements in the knowledge and decision making skills of practitioners, as well as the effectiveness of medical and other allied health schools in improving sexually transmitted disease knowledge and clinical skills.

19.14* Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)

Special Population Target

Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
19.14a Providers practicing in high incidence areas	—	**90%**

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

Baseline data source: Lewis and Freeman 1987.

According to the U.S. Preventive Services Task Force [22] clinicians should take a complete sexual and drug use history on all adolescent and adult patients. Sexually active patients should receive complete information on their risk for acquiring HIV or other sexually transmitted diseases. Patients should be advised against sexual activity with individuals whose infection status is uncertain. Patients who choose to have sexual intercourse with multiple partners or with people who may be infected, should be advised to use a condom at each encounter and to avoid anal intercourse. Women should be informed of the potential risks of HIV infection during pregnancy. People who abuse intravenous drugs should be encouraged to enroll in a drug treatment program, warned against sharing drug injection equipment and using unsterilized syringes and needles, and given sources for uncontaminated injection equipment or referred to community programs that have this information.

*For additional commentary, see Objective 18.9 in *HIV Infection*.

19.15 Increase to at least 50 percent the proportion of all patients with bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia) who are offered provider referral services. (Baseline: 20 percent of those treated in sexually transmitted disease clinics in 1988)

Note: Provider referral (previously called contact tracing) is the process whereby health department personnel directly notify the sexual partners of infected individuals of their exposure to an infected individual.

Baseline data source: STD Surveillance System, CDC.

Partner notification is a public health process for interrupting transmission of infectious diseases that has helped to find, treat, and prevent thousands of sexually transmitted disease cases annually.[21] The purpose of partner notification in sexually transmitted disease control is to identify people who should receive curative sexually transmitted disease treatment, and thus reduce transmission of infection within the community, and also to prevent further complications such as upper genital tract infections.

Previous temporal and geographic trends suggest that partner notification contributed to reducing the national prevalence of syphilis, and especially congenital syphilis.[21] Partner notification strategies have also been effective in helping to control focal outbreaks of infection due to antibiotic resistant gonorrhea and chancroid, and in targeting intervention activities for specific high-risk populations.[7]

Two types of partner notification are generally used by health departments: patient referral and provider referral. With patient referral, offered routinely to every person with a sexually transmitted disease, patients are encouraged and coached to inform their sex partners of exposure to infection; with provider referral (previously called contact tracing), health department personnel directly notify partners of their exposure to an infected individual. Advantages of provider referral include greater certainty that the sex partner(s) have been notified, delivery of risk-reduction messages during the process of notification, and identifying additional sex partners to be notified. However, because provider referral is labor intensive, it has not been possible, given current resources, to extend this prevention strategy to all persons with syphilis, gonorrhea, and chlamydia seen in sexually transmitted disease clinics.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the sexually transmitted disease objectives include the following:

- Determine the number and types of health professionals needed to accomplish the clinical, educational, and research aspects of the sexually transmitted disease objectives.
- Provide sufficient, appropriate curricula on sexually transmitted disease in all schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of sexually transmitted disease information.
- Provide continuing education on sexually transmitted diseases through national professional associations whose members have roles in the delivery of health, mental health, education, and related services.
- Increase the number of faculty development programs and fellowships in sexually transmitted diseases in accredited schools preparing students for careers in health professions.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing data sources are available to track Objectives 19.1, 19.2, 19.3, 19.4, 19.5, 19.6, 19.7, 19.8, 19.13, and 19.15.

Periodic surveys and/or supplements to existing surveys can help track Objectives 19.9 and 19.10.

New data sources are needed to track Objectives 19.11, 19.12, and 19.14.

High Priority Needs

- Creation and use of standardized definitions for all sexually transmitted diseases covered by the year 2000 objectives. Standard definitions would improve temporal and geographic comparability. To be of most use, these definitions should be adopted by State epidemiologists in all 50 States.
- Development of comprehensive reporting systems within each State that build on the current data provided by public sexually transmitted disease clinics and also include a new system of sentinel reporting by private health care providers. Such reporting systems would improve the representativeness and completeness of sexually transmitted disease surveillance.

- Creation and use of an electronic infection-reporting system by State health departments and the largest health departments in metropolitan areas. Use of electronic reporting systems would improve timeliness and ease of data analysis.
- Improved and expanded coordination of surveys of knowledge, attitudes, beliefs, and behaviors relevant to sexually transmitted diseases. Such coordination would aid in monitoring trends in pertinent behavioral variables. Simplified and coordinated systems for behavioral risk factor surveillance will aid in determining the true populations at risk for sexually transmitted diseases, as well as targeting specific interventions to reduce these risks.
- Creation and use of management information systems to monitor sexually transmitted disease control. The cost-effectiveness of methods used to control sexually transmitted diseases should be evaluated at local, State, and national levels. Through such evaluations, decision makers can determine the most cost-effective ways of reducing sexually transmitted diseases and target limited resources more wisely.

Research Needs

Basic Science

- New technologies to detect asymptomatic sexually transmitted diseases. To be effective, new tests should be less expensive, easier to implement, and provide more timely information to the clinician and the patient than those currently available.
- Better antibacterial therapies. New research should focus on combating drug-resistant organisms and reducing difficulties in gaining patient compliance with regimens that require more than a single dose.
- Vaccines against sexually transmitted diseases other than hepatitis B and systems for administering the vaccines to high-risk adult populations. Convincing people to reduce high-risk behaviors is only part of the solution to the national sexually transmitted disease problem. Especially among those who are difficult to reach with risk-reduction messages (e.g., intravenous drug abusers), safe, effective vaccines hold tremendous potential for reducing the devastating effect of sexually transmitted diseases.

Behavioral Research

- Definition of the determinants of adult sexual risk-taking behavior and development of appropriate behavioral interventions. Little is known about why people change (or fail to change) risk-taking behaviors. Without such basic knowledge, it is virtually impossible to design programs that are effective in helping people choose healthy behaviors.
- Understanding of the factors affecting use of preventive measures (condoms, chemical prophylaxis), so that such precautions will be more widely taken.
- Evaluation of counseling to promote safer sexual practices. The specific messages that promote sustained behavior modification for both individuals and communities need to be understood, and if effective, become more widely disseminated.

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Related Objectives From Other Priority Areas

Family Planning

5.3 Infertility

5.5 Adolescent abstinence from sexual intercourse

5.8 Family discussion of human sexuality

Educational and Community-Based Programs

8.4 Quality school health education

8.9 Family discussion of health-related issues

8.10 Community health promotion programs

Maternal and Infant Health

14.1 Infant mortality

14.2 Fetal deaths

14.11 Prenatal care

14.12 Age-appropriate preconception counseling by clinicians

Cancer

16.4 Cervical cancer

HIV Infection

18.1 AIDS

18.2 HIV infection

18.8 Testing for HIV infection

18.10 HIV education in schools

18.11 HIV education in colleges and universities

Immunization and Infectious Diseases

20.11 Immunizations

20.14 Counseling about immunization by clinicians

20.15 Financial barriers to immunizations

20.16 Public health department provision of immunizations

Clinical Preventive Services

21.2 Receipt of recommended services

Surveillance and Data Systems

22.4 Gaps in health data

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Immunization and Infectious Disease

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20.3 Viral hepatitis
20.4 Tuberculosis
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20. Immunization and Infectious Diseases

Introduction

The reduction in incidence of infectious diseases is the most significant public health achievement of the past 100 years. This success is best illustrated by the global eradication of smallpox, achieved in 1977. Other gains in control of infectious diseases are nearly as striking, including the virtual elimination of diphtheria and poliomyelitis in the United States. Much of this progress is a result of improvements in basic hygiene, food production and handling, and water treatment. The development and use of antimicrobial drugs have reduced illness and death from a number of infectious diseases. The other major factor is the development and widespread use of vaccines, which are among the safest and most effective preventive measures.

Notwithstanding the progress that has been made, infectious diseases remain important causes of illness and death in the United States. Specific means for combating many of these diseases exist and could further reduce the toll taken by these conditions if used appropriately.

The very young, older adults, and members of minority groups are at increased risk for many infectious diseases. Each of the causative agents of infectious diseases, even those that are currently rare, poses a potential threat of recurrence or development of resistance to current treatment. In addition, a number of newly recognized diseases have emerged. Recent examples include Legionnaires' disease, toxic shock syndrome, Lyme disease, and the wide spectrum of disease associated with human immunodeficiency virus (HIV) infection. Thus, surveillance systems to detect both the agents and diseases are essential components of modern prevention and control strategies.

In addition to application of specific measures, such as immunization and regulation of food, water, and sewage disposal, there is a need for continued public education about basic hygienic practices, in home, school, and occupational settings; for continued education of health care students and workers about the epidemiology and prevention of these diseases; and for research to improve immunizations, diagnostic methods, and therapeutic modalities.[10]

Note: Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Health Status Objectives

20.1 Reduce indigenous cases of vaccine-preventable diseases as follows:

Disease	*1988 Baseline*	*2000 Target*
Diphtheria among people aged 25 and younger	1	0
Tetanus among people aged 25 and younger	3	0
Polio (wild-type virus)	0	0
Measles	3,058	0
Rubella	225	0
Congenital Rubella Syndrome	6	0
Mumps	4,866	500
Pertussis	3,450	1,000

Baseline data source: Center for Prevention Services, CDC.

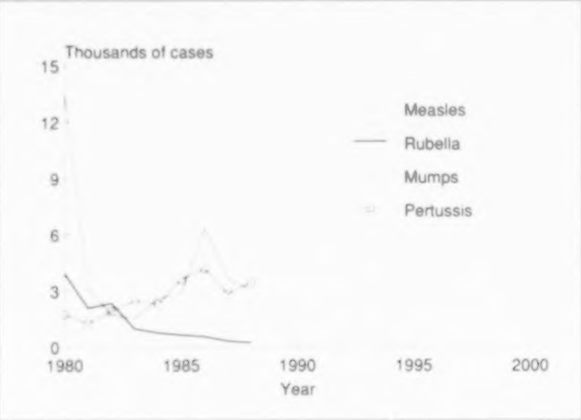


Fig. 20.1

Vaccine-preventable diseases

Diphtheria and Tetanus: With the availability of highly effective toxoids and school entry laws, no one attending school since the early 1980s should develop tetanus or diphtheria. The major barrier to the achievement of complete eradication of these diseases is failure to immunize as appropriate for their age all children, adolescents, and adults.

Polio (wild-type virus), Indigenous Measles, Rubella, and Congenital Rubella Syndrome: The World Health Organization has adopted a resolution for eradication of paralytic poliomyelitis from the world by the year 2000. No cases of indigenous polio caused by wild-type virus have been reported in the United States since 1979.[15]

Since 1978, the United States has had as a goal the elimination of indigenous measles; however, importations with limited spread will continue to occur, and approximately 500 cases of measles are expected each year, even after elimination of indigenous cases. Cases of measles decreased from 26,871 in 1978 to approximately 3,000 cases annually from 1981 through 1988. In 1989, there was a resurgence of measles with a provisional total of 16,236 cases reported.

Current illness can be divided into two major patterns—preschool outbreaks and school outbreaks.[12] The former are predominantly in unvaccinated children and require better immunization coverage at recommended ages. The latter occur primarily in vaccinated children and require more aggressive revaccination strategies during outbreak control efforts. Other requirements include continued high vaccine coverage at school entry, implementation of a two-dose schedule, identification and vaccination of at-risk groups, and use of every health care contact to provide all needed vaccines, including measles vaccine.[3] Because measles vaccine is usually administered with mumps and rubella vaccines (MMR) and because the latter diseases are less communicable than measles, high coverage with a two-dose MMR schedule should lead to elimination of rubella and congenital rubella syndrome and to marked decreases in mumps cases.

Mumps: Reported mumps cases decreased dramatically from 152,209 cases in 1968—the year after mumps vaccine licensure—to 2,982 cases in 1985. In 1986 and 1987, however, there were marked increases, peaking at 12,848 cases in 1987. Following the epidemic in 1987, mumps cases decreased to 4,866 in 1988 and a provisional total of 5,611 in 1989. These increases were due to cases occurring in unvaccinated children, predominantly in States without immunization requirements for mumps. Increased use of MMR, particularly in a two-dose schedule, should permit attainment of the target for reduction of mumps.[14] Currently, 11 States do not have mumps immunization requirements.

Pertussis: The majority of reported cases of pertussis occur in children up to age 5. The most significant morbidity and incidents of death occur in infants—predominantly in infants less than 6 months of age.[4] Pertussis vaccine, which is given with diphtheria and tetanus as DTP, is recommended in a four-dose primary schedule commencing at 6 to 8 weeks of age and ending with the fourth dose at 15 to 18 months of age. In addition, a booster dose is needed before school entry. Because at least three doses are considered necessary for protection against the disease, infants are not adequately protected against pertussis prior to 6 months of age.

Besides reducing illness and death in the age group most at risk for pertussis and its complications, increased vaccination against pertussis can reduce its overall transmission. High levels of age-appropriate vaccination of infants and young children need to be achieved, requiring the identification and vaccination of high-risk groups and the assurance that every health care encounter becomes an opportunity for vaccination. Efforts are continuing to develop a safer pertussis vaccine that is at least as effective as current whole-cell vaccines.[1] The availability of such a vaccine should lead to increased use of pertussis vaccine among the young. If usable in children and adults older than 6 years of age, the new vaccine may lead to decreased transmission of pertussis among older people and from older people to infants and young children.

The reduction of indigenous cases of vaccine-preventable diseases will require sensitive surveillance to detect and report cases as early as possible. It will also require broadening the definition of the at-risk population to include adults as well as children in some instances.

20.2 Reduce epidemic-related pneumonia and influenza deaths among people aged 65 and older to no more than 7.3 per 100,000. (Baseline: Average of 9.1 per 100,000 during 1980 through 1987)

Note. Epidemic-related pneumonia and influenza deaths are those that occur above and beyond the normal yearly fluctuations of mortality. Because of the extreme variability in epidemic-related deaths from year to year, the target is a 3-year average.

Baseline data source: Center for Infectious Diseases, CDC.

Approximately 80 to 90 percent of all influenza-associated deaths in the United States occur in people aged 65 and older, the fastest growing age group of the population. During six influenza epidemics from 1972 to 1982, the incidence of influenza-associated deaths in this age group was 34 to 104 times greater than in younger people. Reduction of deaths in this age group has been hindered by relatively low vaccine utilization, partial antigenic mismatches of vaccine strain and circulating strain owing to the continual emergence of new virus strains, and decreased immune response to vaccine with increasing age of recipients. A combination of approaches is desirable: (1) increase vaccine utilization from the current level of approximately 20 percent to 60-80 percent of people aged 65 and older, with a special emphasis on promoting vaccine in the highest risk groups, particularly those with chronic cardiopulmonary disease; (2) improve the match between vaccine and circulating strains by more aggressive surveillance for new variants in the Pacific Basin region and by streamlining vaccine production and quality control techniques to reduce the lag between recognition of variants and incorporation in vaccine; and (3) develop and introduce inactivated vaccines of higher immunogenicity in older people (e.g., conjugated or adjuvant vaccines) or supplemental live/attenuated vaccines capable of inducing local immunity. Pending these improvements, use of antiviral prophylaxis with influenza vaccination in influenza outbreaks is recommended.

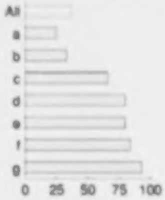
20.3* Reduce viral hepatitis as follows:

(Per 100,000)	*1987 Baseline*	*2000 Target*
Hepatitis B (HBV)	63.5	40
Hepatitis A	31	23
Hepatitis C	18.3	13.7

Special Population Targets for HBV

	HBV Cases	*1987 Estimated Baseline*	*2000 Target*
20.3a	**Intravenous drug abusers**	**30,000**	**22,500**
20.3b	**Heterosexually active people**	**33,000**	**22,000**
20.3c	**Homosexual men**	**25,300**	**8,500**
20.3d	**Children of Asians/Pacific Islanders**	**8,900**	**1,800**
20.3e	**Occupationally exposed workers**	**6,200**	**1,250**
20.3f	**Infants**	**3,500**	**550 new carriers**
20.3g	**Alaska Natives**	**15**	**1**

Percent Decrease



Baseline data source: Center for Infectious Diseases, CDC.

Hepatitis A continues to be an important disease, with 75,800 cases estimated annually. After a steady decrease from 1971 through 1983, disease rates are increasing, possibly related to increased transmission among drug abusers. Risk is also very high among American Indians, among whom cyclic epidemics occur every 5 to 10 years. Current control measures—namely immunoglobulin for case contacts—have historically had no impact on national disease rates. Candidate hepatitis A vaccines are undergoing clinical trials and may become available before the year 2000. If so, use of these vaccines in high-risk groups, such as American Indians and Alaska Natives, international travelers, and children attending child care centers, should begin to have an impact on disease incidence. Slow development of vaccines and difficulty in getting the vaccine to the target populations may impede efforts.

Incidence of hepatitis C (parenterally transmitted non-A non-B hepatitis) is more difficult to estimate, and until recently no effective control measures were available. Cloning and identification of one of the causative agents occurred in 1988, and a laboratory test to identify infected persons is now available. Such tests will permit universal screening of blood to prevent posttransfusion hepatitis, which accounted for about 20 percent of the disease through 1985, but for only 5 percent of the disease in 1986 and 1987. Diagnostic tests will also permit the epidemiology of this disease to be clearly defined and may allow evaluation of immunoglobulin prophylaxis and candidate vaccines.

Hepatitis B is primarily an infection of people in certain risk groups to whom available vaccines are now targeted. Risk is also very high among Alaska Natives, Pacific Islanders, Asians, and others who emigrate from areas of high hepatitis B endemicity. In 1987, the Centers for Disease Control (CDC) estimated the total number of hepatitis B virus infections to be 300,000 per year. Of these patients, 6 to 10 percent become carriers at risk of developing chronic liver disease and becoming infectious to others. Wider use of vaccine is recommended for infants and children in high-risk populations.

The incidence of hepatitis B cases continued to increase through 1985 despite availability of effective vaccines. By 1987, rates had decreased slightly—probably due to changing sexual behavior.

Licensure of new vaccines should decrease the cost of vaccine, which should stimulate much wider use by the year 2000. Disease incidence should be decreased by 80 to 90 percent among infants of hepatitis B-carrier mothers and among occupationally exposed workers (defined as those whose occupations cause them to be exposed on average one or more times per month) because of universal prenatal hepatitis B surface antigen (HBsAg) screening of mothers and implementation of industrywide standards for vaccination of occupationally exposed workers. Incidence in homosexual men should continue to decrease because of changes in sexual behavior and wider vaccine use. Decreases among drug abusers will be difficult to achieve unless drug use can be discouraged through behavior modification, users can be motivated to receive the vaccine, and programs can be established to deliver vaccine to these individuals. Achieving a 37-percent overall disease reduction will also depend on preventing disease transmission through heterosexual contact, which accounts for 21 percent of cases, and will require aggressive programs to deliver vaccine in sexually transmitted disease clinics, high schools, and colleges. When less costly vaccines become available, programs for universal vaccination of children or adolescents must be strongly considered as the best approach for long-term control of this disease.

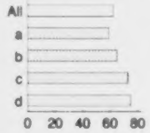
* Special Population targets 20.3b, and 20.3c also appear as Objective 19.7 in *Sexually Transmitted Diseases*.

20.4 Reduce tuberculosis to an incidence of no more than 3.5 cases per 100,000 people. (Baseline: 9.1 per 100,000 in 1988)

Special Population Targets

	Tuberculosis Cases (per 100,000)	*1988 Baseline*	*2000 Target*
20.4a	**Asians/Pacific Islanders**	**36.3**	**15**
20.4b	**Blacks**	**28.3**	**10**
20.4c	**Hispanics**	**18.3**	**5**
20.4d	**American Indians/Alaska Natives**	**18.1**	**5**

Percent Decrease



Baseline data source: Center for Prevention Services, CDC.

Achievement of this objective depends directly on the application of preventive therapy for tuberculous infection among high-risk populations. Over the 10-year period 1975-84, the percentage decline in tuberculosis case rates was essentially the same for whites and nonwhites. Even so, the incidence of tuberculosis in 1988 was seven times higher among blacks than among non-Hispanic whites, nine times higher among Asians and Pacific Islanders, four times higher among American Indians, and four times higher among Hispanics. Minorities now account for nearly two-thirds of reported cases; among children, minority group members constitute 83 percent of cases. In addition, the spread of HIV infection has increased the risk of tuberculosis. Most cases of tuberculosis occur in people who are already infected with tubercle bacilli. Individuals in this population who are at highest risk of developing disease are those who have been recently infected and those who are exposed to a variety of stressors. By reducing the number of people in this pool of infected persons, future illness will be dramatically reduced. The

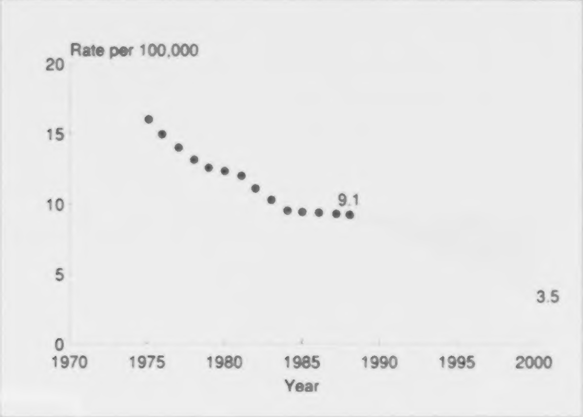


Fig. 20.4

Incidence of tuberculosis

Department of Health and Human Services has recommended a Strategic Plan for the Elimination of Tuberculosis.[2] The key strategies of the plan are (1) identification and treatment of infectious cases so that they do not continue to transmit infection and (2) identification and treatment of infected people before they develop the infectious form of the disease. In addition, the development of a vaccine to protect uninfected people and better methods of disinfecting air contaminated with tubercle bacilli will reduce the transmission of new infection. Implementation of this plan will require the cooperation of the Public Health Service (PHS), State and local health departments, voluntary agencies (e.g., American Lung Association), and professional medical societies (e.g., American Medical Association and American Public Health Association). Achievement of these strategies will also require continuing research efforts.

20.5 Reduce by at least 10 percent the incidence of surgical wound infections and nosocomial infections in intensive care patients. (Baseline data available in late 1990)

Hospitals participating in the National Nosocomial Infection Surveillance (NNIS) System actively monitor surgical wound infections. Although not all hospitals participate in the NNIS, available data indicate that between 1980 and 1988 the crude surgical wound infection rate increased. The reasons for this increase are unknown but may be due to changing patient demographics; that is, older, sicker patients (i.e., patients at greater risk of infection) may be admitted for surgery while younger, healthier patients may undergo outpatient or "one-day" surgery for simple procedures. Such a shift artificially increases the crude surgical wound infection rate and demonstrates the need for a risk index which adjusts for patient mix. In NNIS, several risk indices are currently being evaluated.

When combined with an active prevention and control program, reporting surgeon-specific surgical infection rates to individual surgeons has been shown to lead to reductions in infections.[8] The major barriers to such reporting are concerns related to medical-legal implications of confidentiality. Achievement of this objective will involve collaboration with hospital epidemiologists, infection control practitioners, the Association of Practitioners in Infection Control, Society of Hospital Epidemiologists of America, Surgical Infection Society, American Hospital Association, Joint Commission on the Accreditation of Health Care Organizations, and the Health Care Financing Administration.

Hospitals participating in the NNIS also actively monitor infections in intensive care unit patients. Intensive care units (ICUs) have the highest rate of infection of any hospital area. While ICU patients may account for only 15 percent of hospital admissions, they account for 50 percent or more of nosocomial infections. Patients in these units are the most severely ill, are often immunocompromised, and are subject to numerous invasive procedures.

Ongoing analysis of the NNIS ICU components (adult and pediatric ICUs and high-risk nurseries) will permit determination of device-related infection rates and allow adjustment of infection rates by severity of illness. Through these measures, specific education needs can be identified at the hospital level. Increased education of critical care specialists, timely feedback of nosocomial infection data to these individuals, and improved application of current and new guidelines in these areas should decrease ICU infection rates by 10 percent by the year 2000.

20.6 Reduce selected illness among international travelers as follows:

Incidence	*1987 Baseline*	*2000 Target*
Typhoid fever	**280**	**140**
Hepatitis A	**1,280**	**640**
Malaria	**2,000**	**1,000**

Baseline data source: Center for Infectious Diseases, CDC.

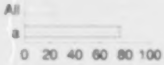
More than two-thirds of the cases of typhoid fever identified in the United States each year are now attributed to international travel. A new oral typhoid vaccine has recently been approved for use in the United States, and other vaccines may be available during the next decade. This objective assumes that use of these vaccines in people traveling to areas with a relatively high risk of typhoid fever will decrease the occurrence of the disease in these individuals. This objective should be implemented by State and local health departments and other providers of medical care, including private physicians. The major barriers to achievement of this objective are the relatively poor efficacy of the new oral vaccine (about 60 percent) and the difficulty in achieving high rates of immunization in target populations.

Travelers to tropical and/or developing countries are at high risk of acquiring hepatitis A through consuming contaminated food or water or contact with infected individuals in the local population. For this reason, immunoglobulin is recommended for travelers to such areas. Nevertheless, it is believed that only a minority of such travelers actually receive immunoglobulin prior to travel. Although the exact risk is not well quantified, the Viral Hepatitis Surveillance Program found that 5.4 percent of hepatitis A patients reported international travel as their only risk factor between 1984 and 1987. When underreporting (an estimated 33 percent of cases are reported) and subclinical infections are considered, an estimated 5,000 infections occur among the 7.4 million travelers to tropical countries annually.

Each year several million U.S. travelers are exposed to malaria, and more than 1,000 imported malaria infections are reported to the National Malaria Surveillance System at CDC. These cases represent 20 to 60 percent of all cases of malaria in the United States. From 1980 to 1987, 35 U.S. citizens died of malaria. The direct cost of a nonfatal malaria infection in the United States is estimated to be $2,500 to $3,000. Chemoprophylaxis of malaria in travelers costs approximately $12 per traveler per 3-week trip. Surveys among U.S. travelers indicate that more than 90 percent of travelers to East Africa are aware of malaria risk and use chloroquine for prophylaxis, as compared with 70 percent of travelers to West Africa, 25 percent to Haiti, and 10 percent to rural areas of Southeast Asia. Compliance with prophylaxis is poor; only 50 percent of travelers to East Africa take their prophylaxis regularly for the recommended period of time and use antimosquito measures. Chloroquine-resistant *Plasmodium falciparum* is transmitted in most African countries and has caused outbreaks of malaria in U.S. citizens in Niger, Togo, and Mali. The only drug that is effective against resistant malaria and reasonably safe is mefloquine. This drug is being marketed in the United States and, if used properly, may reduce the risk of malaria significantly.

20.7 Reduce bacterial meningitis to no more than 4.7 cases per 100,000 people. (Baseline: 6.3 per 100,000 in 1986)

Special Population Target

	Bacterial Meningitis Cases (per 100,000)	*1987 Baseline*	*2000 Target*	*Percent Decrease*
20.7a	**Alaska Natives**	33	8	

Baseline data source: Center for Infectious Diseases, CDC.

Bacterial meningitis is a major cause of death and neurologic impairment in children. A recent analysis of *Haemophilus influenzae* type b (Hib) disease, the most important cause of meningitis in children, estimated costs of approximately $2 billion per year in the United States. Reducing the rate of bacterial meningitis would both decrease childhood deaths and reduce the number of children with permanent neurologic damage, including deafness.

The projected reduction in Hib disease assumes that the newly developed vaccine will be licensed for use in infants, will be used by at least 75 percent of the eligible population, and will be at least 65 percent effective. Baseline data for Hib immunization levels are not currently available. The vaccination program will be promoted through public and medical educational materials and implemented through currently administered vaccination programs. Extending such programs to cover child day care can be an important step in this effort.

Group B streptococcal disease is the leading cause of meningitis in neonates. Reduction assumes peripartum chemoprophylaxis, hyperimmune globulin, and vaccines will prove effective in prevention of disease and will be used by the medical community.

20.8 Reduce infectious diarrhea by at least 25 percent among children in licensed child care centers and children in programs that provide an Individualized Education Program (IEP) or Individualized Health Plan (IHP). (Baseline data available in 1992)

Children in licensed child care centers have three to four times as much diarrheal disease as do those not in child care. Similar rates are reported among children with disabilities enrolled in special early childhood IEP and IHP programs administered by public school systems. Reducing this risk would improve the health of children attending day care and reduce the absenteeism costs to parents and employers in caring for sick children.

Keys to achieving this objective are the development of the following: (1) effective control programs based on findings from current studies to identify factors associated with infectious disease in child care centers, (2) adequate surveillance for child care-related disease, (3) identification of cost-effective prevention and control strategies, and (4) vaccines for specific agents, such as rotavirus. Attaining this objective will require the involvement of CDC, State and local health departments, regulatory agencies, universities and nongovernmental organizations, as well as the child care and early childhood education professionals who will be principally responsible for carrying out infection control measures in their programs.[9]

20.9 Reduce acute middle ear infections among children aged 4 and younger, as measured by days of restricted activity or school absenteeism, to no more than 105 days per 100 children. (Baseline: 131 days per 100 children in 1987)

Baseline data source: National Health Interview Survey, CDC.

Acute middle ear infections (otitis media) are a common cause of illness in young children and result in frequent use of antibiotics. Children with recurrent infections may develop hearing deficits and poor school performance and often require surgical procedures to improve middle ear drainage. *Streptococcus pneumoniae* is the most common etiologic agent. However, prevention through use of the currently available pneumococcal vaccine is not possible because the most frequent pneumococcal capsular types causing disease are very poor immunogens in children less than 2 years old, the group at highest risk for recurrent ear infections. A more immunogenic pneumococcal vaccine is currently being developed and is expected to be available for use before the year 2000. Immunization of children who have had an acute ear infection may decrease the number of episodes of recurrent disease. Federal, State, and local health departments and physicians with primary care responsibilities for children should promote the use of the new vaccine when it becomes available.

20.10 Reduce pneumonia-related days of restricted activity as follows:

	1987 Baseline	*2000 Target*
People aged 65 and older (per 100 people)	**48 days**	**38 days**
Children aged 4 and younger (per 100 children)	**27 days**	**24 days**

Baseline data source: National Health Interview Survey, CDC

Pneumonia and other lower respiratory infections are a major cause of illness in the United States, primarily in older adults and the very young. *Streptococcus pneumoniae* and influenza virus are the most important respiratory pathogens that cause disease in older adults. Respiratory syncytial virus, influenza virus, and parainfluenza virus type 3 are the most common causes of the most common illness in young children. Effective pneumococcal and influenza vaccines are now available for use by older adults. Vaccines are not available for respiratory syncytial virus and parainfluenza virus type 3, but candidate vaccines are being developed.

Achieving these objectives is contingent on increased use of current vaccines, the availability of new vaccines, better diagnostic methods, and earlier treatment. Immunization of older adults with influenza and pneumococcal vaccine will reduce the number of days of restricted activity due to respiratory illness. Federal and private research funding agencies and vaccine manufacturers should be encouraged to expand programs for development and testing of vaccines for respiratory syncytial virus and parainfluenza type 3. The use of safe, effective vaccines may also decrease days of restricted activity in children under 5 years old. Federal, State, and local health departments, organizations of health professionals, and primary care physicians should all help in the promotion and delivery of vaccines to persons recommended for immunization. Third-party payers of health care can also do more to promote recommended immunizations.

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Risk Reduction Objectives

20.11 Increase immunization levels as follows:

Basic immunization series among children under age 2: at least 90 percent. (Baseline: 70-80 percent estimated in 1989)

Basic immunization series among children in licensed child care facilities and kindergarten through post-secondary education institutions: at least 95 percent. (Baseline: For licensed child care, 94 percent; 97 percent for children entering school for the 1987-1988 school year; and for post-secondary institutions, baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among institutionalized chronically ill or older people: at least 80 percent. (Baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among noninstitutionalized, high-risk populations, as defined by the Immunization Practices Advisory Committee: at least 60 percent. (Baseline: 10 percent estimated for pneumococcal vaccine and 20 percent for influenza vaccine in 1985)

Hepatitis B immunization among high-risk populations, including infants of surface antigen-positive mothers to at least 90 percent; occupationally exposed workers to at least 90 percent; IV-drug users in drug treatment programs to at least 50 percent; and homosexual men to at least 50 percent. (Baseline data available in 1992)

Baseline data source: Center for Prevention Services and Center for Infectious Diseases, CDC.

One of the goals of the National Childhood Immunization Initiative, begun in 1978, is to establish a system for effective delivery of vaccines to the preschool population, i.e., adequately immunizing at least 90 percent of all children by 2 years of age. Although an effective national assessment of the preschool population has not been developed, the immunization level is believed to be approximately 70 to 80 percent, with certain pockets of the population having levels lower than 50 percent. Special efforts need to be targeted to minority populations, particularly blacks and Hispanics, since these groups appear to have substantially lower immunization levels than the general population.

A second goal of the initiative is to immunize at least 95 percent of the school children in the United States. Each State has enacted laws and/or regulations that specifically address the issue of immunization requirements to attend school, whether public or private. Similar laws and/or regulations pertaining to licensed day care facilities are in place or being drafted.

Approximately 40,000 persons die each year from complications associated with pneumococcal disease. Sequelae of influenza result in an additional 20,000 deaths. Obstacles include vaccine costs and lack of provider knowledge and motivation.[16] The provision of vaccine against pneumococcal pneumonia and influenza disease in institutions for the chronically ill and frail elderly is not legally mandated. A recent survey of nursing homes in six States indicated that the proportion of residents immunized ranged from 8 to 98 percent, with a 62-percent overall coverage rate. No similar data are available for pneumococcal vaccine coverage. Efforts to require appropriate immunization as a condition of licensure or certification for Medicare or Medicaid reimbursement would also do much to assure that these immunization goals are met in institutions that serve high-risk populations. But reimbursement alone will not raise coverage levels. It will be necessary to have a concerted information and educational campaign directed at the lay and professional public to increase awareness of the need for influenza and pneumococcal vaccines.

Lifetime risk for hepatitis B disease varies from almost 100 percent in high-risk groups to 3 to 5 percent for the general population, yet only about 30 percent of people in high-risk groups have been immunized. To meet this objective, all pregnant women should be screened for hepatitis B surface antigen.[5] A delivery system needs to be established to ensure that all infants born to infected mothers begin their hepatitis B vaccine series at birth with followup to ensure that they complete the series according to the recommended schedule. Special attention should be given to Alaska Natives and Pacific Islanders, Southeast Asians, and women who migrate from areas of high endemicity. Two key factors in the immunization of homosexual males and intravenous drug users are the provision of education and assuring confidential access to immunization. Intervention for intravenous drug users should include all potential contacts with the health care system, such as drug treatment programs, sexually transmitted disease centers, and HIV clinics. The current cost of vaccine is a major barrier to immunization in high-risk groups.

20.12 Reduce postexposure rabies treatments to no more than 9,000 per year. (Baseline: 18,000 estimated treatments in 1987)

Baseline data source: Center for Infectious Diseases, CDC.

Each year approximately 18,000 people in the United States are vaccinated against rabies after being exposed to rabid or potentially rabid animals. Postexposure treatment includes a series of five vaccinations with rabies vaccine and one dose of rabies immunoglobulin administered concurrently with the first dose of vaccine. This treatment is expensive, with the cost of the biologicals alone ranging from $500 to $700. Since the decision to treat an exposed person is primarily based on the local presence of animal rabies, the number of people receiving postexposure treatment can be reduced by educating physicians and public health consultants about when postexposure rabies treatment is indicated.

Various domestic and wild animals can be immunized against rabies by ingesting baits containing recombinant DNA-derived rabies vaccines. Large-scale administration of such vaccines to targeted animal species could eradicate rabies in certain animal populations, for example, raccoons, skunks, and foxes, thereby further reducing the necessity for many postexposure treatments. In 1987, these three species represented 73 percent of the total number of rabid animals in the United States. Additional efficacy and safety testing of candidate vaccines will be necessary before large-scale immunization efforts can be undertaken.[6]

Services and Protection Objectives

20.13 Expand immunization laws for schools, preschools, and day care settings to all States for all antigens. (Baseline: 9 States and the District of Columbia in 1990)

Baseline data source: Center for Prevention Services, CDC.

Currently all 50 States and the District of Columbia have immunization laws or requirements for students in some or all grades from kindergarten through grade 12 and children attending licensed day care facilities (table 20.13). In general, the number of antigens required by day care and public school laws are quite similar. In recent years, there has been a marked increase in the number of States strengthening their existing immunization laws by adding new vaccine requirements and expanding coverage into the day care area.

Antigen	*Day Care**	*Some grades, including at least kindergarten - first grade*	*K-12th Grade*
Measles	51	5	46
Mumps	41	20	20
Rubella	51	8	43
Polio	51	5	46
Diphtheria	51	5	46
Tetanus	40	5	43
Pertussis	46	42	NA
Haemophilus b	9	NA	NA

**Idaho is the only State without any day care regulation for immunization.*

Fig. 20.13

Requirements of the 50 States and the District of Columbia

20.14 Increase to at least 90 percent the proportion of primary care providers who provide information and counseling about immunizations and offer immunizations as appropriate for their patients. (Baseline data available in 1992)

Currently, preschool children and adults in high-risk groups are underimmunized. Physicians, nurses, and other health care providers (including midwives) have a key role in influencing attitudes of patients regarding appropriate immunization. Shaping the attitudes and future practices of medical, nursing, and other health providers is critical to ensuring that appropriate immunizations are provided to their patients. Thousands of cases of illness and associated deaths can be prevented (especially in adults) with available vaccines. In the Rand Health Insurance Experiment, only 45 percent of infants received timely immunization against DTP and polio and only 4 percent of adults received a tetanus shot in the 3-year study period. Of particular importance is that free health care alone was not a sufficient incentive to ensure that participating patients received recommended levels of preventive services.[11]

Between 19 and 50 percent of primary care physicians offer tetanus immunization to patients.[13] Rates of physician compliance with recommendations for influenza immunization for persons over 65 years of age range from 3 percent measured by record audit to 68 percent measured by self-report.[11] In addition, differences in physician prevention practice patterns for white and minority patients exist. For example, physicians with predominantly black and Hispanic patient populations are significantly less likely to recommend influenza vaccination for patients 65 or older as compared to physicians with predominantly white patient populations (48 percent versus 74 percent).[7]

Barriers to widespread administration of immunizations include patient reluctance to receive vaccines because of possible discomfort, potential side effects, or inconvenience and health care providers' failure to offer these primary preventive services to patients.

20.15 Improve the financing and delivery of immunizations for children and adults so that virtually no American has a financial barrier to receiving recommended immunizations. (Baseline: Financial coverage for immunizations was included in 45 percent of employment-based insurance plans with conventional insurance plans; 62 percent with Preferred Provider Organization plans; and 98 percent with Health Maintenance Organization plans in 1989; Medicaid covered basic immunizations for eligible children and Medicare covered pneumococcal immunization for eligible older adults in 1990)

Baseline data source: Health Insurance Association of America Survey 1989; Center for Prevention Services, CDC.

Immunization represents a partnership between the public and private sectors. The private sector is the source of immunizations for approximately 50 percent of children and almost all adults. Estimates of series completion among children by 2 years of age range from 50 percent to 82 percent. Vaccine coverage among adults is worse. Only about 20 percent of the target population receive annual influenza vaccinations, and 10 percent of the target population is believed to be immunized against pneumococcal disease. Cost, a potential barrier to immunization in both the private and public sectors, has escalated substantially in recent years. In 1982, the cost of vaccines to fully immunize a child in the private sector was approximately $23.29. In 1988, the cost had risen to approximately $128.06, not including any added costs for office visits.

20.16 Increase to at least 90 percent the proportion of public health departments that provide adult immunization for influenza, pneumococcal disease, hepatitis B, tetanus, and diphtheria. (Baseline data available in 1991)

Appropriate public support for the purchase and delivery of vaccines against influenza, pneumococcal disease, and hepatitis B is likely to lead to higher coverage through private sector involvement as well. Achievement of this objective can be enhanced if the current level of public support for childhood vaccines is maintained (i.e., the same number of doses are purchased regardless of prices and State and local health departments maintain the same level of commitment). New resources will be required to cover purchase and delivery of adult immunization. Some local health departments will have to remove other barriers to immunizations, such as requiring physicals, physician referrals, or enrollment in another health department program before services are rendered.

20.17 Increase to at least 90 percent the proportion of local health departments that have ongoing programs for actively identifying cases of tuberculosis and latent infection in populations at high risk for tuberculosis. (Baseline data available in 1991)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

People at high risk for tuberculosis include recent contacts of infectious cases, foreign-born persons from high-prevalence areas, high-risk minority populations, the homeless, migrant workers, people in nursing homes and correctional institutions, and known or suspected HIV-infected persons. It is estimated that at least one-half of reported cases, and a higher proportion of people infected without current disease, fall into one or more of these high-risk populations. Therefore, targeting, screening, and prevention activities aimed at these populations could have a profound impact on reducing future tuberculosis illness and death.

20.18 Increase to at least 85 percent the proportion of people found to have tuberculosis infection who completed courses of preventive therapy. (Baseline: 89 health departments reported that 66.3 percent of 95,201 persons placed on preventive therapy completed their treatment in 1987)

Baseline data source: Center for Prevention Services, CDC.

The major obstacle to the completion of preventive therapy for those who have tested positive for tuberculosis infection is patient noncompliance and the reluctance of some physicians to prescribe courses of preventive therapy for patients over 35 years old. Solutions include reducing the duration of therapy by finding more potent drugs, using behavioral strategies to predict noncompliance and improve compliance, and increasing the use of directly observed therapy.

20.19 Increase to at least 85 percent the proportion of tertiary care hospital laboratories and to at least 50 percent the proportion of secondary care hospital and health maintenance organization laboratories possessing technologies for rapid viral diagnosis of influenza. (Baseline data available in 1992)

Although vaccination is the primary mode for prevention of influenza and its complications, use of antiviral agents will become increasingly important as an adjunct to vaccine for prevention and treatment of the disease. Appropriate use of antiviral drugs will be fostered by increasing the availability of sensitive and specific laboratory diagnostic tests with a turnaround time fast enough to aid in patient management decisions. First generation rapid diagnostic tests have been adopted in major medical centers and can provide results within one day of specimen collection. In 1984, approximately 45 percent of laboratories surveyed had virus isolation capabilities in place.

Diagnostic test kits for direct detection of influenza are now commercially available. These tests, based frequently on monoclonal antibodies, can be replaced by second generation tests that give results within approximately one hour and have a sensitivity of about 80 percent when used on aspirated secretions. Third generation tests are now being developed using approaches based on gene amplification (polymerase chain reaction) that can detect much lower amounts of virus. This will enable diagnosis to be accomplished with throat swab specimens, greatly increasing the acceptance of diagnosis by patients. Because in some cases antiviral-resistant mutants can emerge from treated patients, possible spread of such variants should be monitored by reference laboratories at the State level, using standard methods. Such methods are now being developed and will be transferable to State health department laboratories.

Personnel Needs

Priorities for ensuring an adequate supply of trained personnel to achieve the Immunization and Infectious Diseases objectives include the following:

- Establish the number of health professionals who are needed to deal with the practice, educational, and research aspects of the objectives.
- Provide curricular content on immunization against and epidemiology of infectious diseases in all schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.

- Increase the provision of continuing education on the prevention, identification, and referral or treatment of infectious diseases by national professional associations whose members have roles in the delivery of health and mental health services.
- Increase the number of faculty development programs and fellowships with emphasis on infectious disease epidemiology, prevention, and control.

Surveillance and Data Needs

Availability of Future Data

Annual data from existing sources are available to track Objectives 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.9, 20.10, parts of 20.11, 20.12, 20.13, 20.15, 20.18, and 20.19.

New surveillance systems are needed to track Objective 20.8 and parts of Objectives 20.11, 20.14, 20.16, and 20.17.

High Priority Needs

Priorities for improving surveillance of infectious diseases in the next decade include:

- Development of a surveillance system for early detection of infectious diseases and for monitoring control programs in child care centers.
- Development of a surveillance system to monitor compliance of acute care facilities with recommended infection control practices and procedures.
- Development of tuberculosis information systems to measure the number of health departments with screening programs targeted at high-risk populations, the number of people tested, the number found to be infected, the number placed on preventive therapy, and the number completing therapy.
- Improvement of the existing surveillance system to increase reporting of hospitalized and nonhospitalized cases of notifiable diseases in people who seek medical attention, using uniform case definitions.
- Development of preschool, school-age, and adult data bases of immunization assessment information that permit accurate evaluation of progress toward the year 2000 targets.
- Increased use of quality assurance programs by laboratories.
- Expansion of the National Nosocomial Infection Surveillance System to provide a more valid estimate of nosocomial infection rates.
- Improvement in surveillance and reporting of infectious diseases in international travelers.

Research Needs

Priorities for research to improve immunization and infectious disease control during the 1990s include the following:

- Development and introduction of new or improved vaccines including (acellular) pertussis, *H. influenzae* type b, tuberculosis, respiratory syncytial virus, malaria, rotavirus, measles, *S. pneumoniae*, Group B streptococcus, measles, and parainfluenza virus type 3.

- Clarification of the relationship between whole-cell pertussis vaccines and serious neurologic reactions and investigation of possible adverse effects of vaccines.
- Evaluation of the effectiveness of a two-dose measles vaccines schedule.
- Elucidation and evaluation of the optimal schedule for combined use of inactivated and live poliovirus vaccines.
- Development and evaluation of rapid, sensitive, and specific diagnostic tests for measles and tuberculosis, as well as emerging infectious diseases such as Lyme disease.
- Development of effective immunoadjuvants to improve the efficacy of currently available vaccines for children, older adults, and the immunocompromised.
- Refinement of *Streptococcus pneumoniae* vaccine for use in infants and young children to prevent otitis media complications.

Related Objectives From Other Priority Areas

Educational and Community-Based Programs

8.4	Quality school health education
8.5*	Health promotion in postsecondary institutions
8.7	Health promotion activities for hourly workers
8.11	Programs for racial/ethnic minority groups
8.14	Effective health systems

Occupational Safety and Health

10.5	Hepatitis B infections among occupationally exposed workers
10.9	Hepatitis B immunization
10.12	Worksite health and safety programs

Food and Drug Safety

12.1	Foodborne infections
12.2	Salmonella outbreaks
12.3	Refrigeration and cutting board practices
12.4	Food protection standards

Maternal and Infant Health

14.16	Primary care for babies

Clinical Preventive Services

21.2	Receipt of recommended services
21.4	Financial barriers to receipt of services
21.5	Clinical preventive services from publicly funded programs
21.6	Provision of recommended services by clinicians
21.8	Racial/ethnic minority representation in the health professions

Surveillance and Data Systems

22.3	Comparable data collection procedures

Data Source References

Center for Infectious Diseases, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA.

Health Insurance Association of America, Washington, DC.

National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

National Vital Statistics, National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

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Clinical Preventive Services

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21. Clinical Preventive Services

Introduction

Attainment of the year 2000 national health promotion and disease prevention objectives relies substantially on improved access to and increased use of clinical preventive services. Clinical preventive services refer to those disease prevention and health promotion services—immunizations, screening for early detection of disease or risk factors, and patient counseling—that are delivered to individuals in a health care setting. Numerous objectives listed elsewhere target increases in the use of individual preventive services (see list of related objectives from other priority areas). The objectives here support those objectives by addressing barriers that impede access to and use of clinical preventive services. Also sought is an increase in the proportion of people who receive complete sets of essential preventive services at recommended intervals, thereby emphasizing the importance of a coordinated and holistic approach to preventive care.

The effectiveness of preventive services in reducing morbidity and premature mortality is now well documented. The dramatic declines observed for stroke mortality, cervical cancer mortality, and childhood infectious diseases are largely attributed to the widespread application of three preventive services: high blood pressure detection and control, Pap tests, and childhood immunizations. Other preventive services, such as screening mammography, have been shown to be effective in controlled intervention trials.

The full range of scientific literature on clinical preventive services was recently reviewed by the U.S. Preventive Services Task Force, a 20-member, non-Federal, multidisciplinary panel of prevention experts appointed by the U.S. Public Health Service and charged with developing scientifically sound recommendations for clinical preventive services based on age, gender, and other risk factors.[44] A summary of the Task Force's methods and specific recommendations for age-, gender-, and risk-appropriate services and examination intervals can be found in Appendix E. The U.S. Preventive Services Task Force found compelling evidence of effectiveness for a number of clinical preventive services; for others the scientific evidence was inadequate to evaluate their effectiveness or to determine optimal frequencies for their use; for still others evidence of ineffectiveness was pervasive. Although the review was broad, it was not exhaustive. The recommendations developed should be viewed as a core set, not an optimal set, of preventive services. Expanded research on the efficacy, effectiveness, and cost-effectiveness of various clinical preventive services could help to expand the list of effective clinical preventive services, justify their use, and reduce some of the barriers to their delivery.

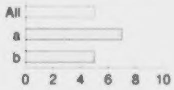
Those barriers are in some cases substantial. Many Americans lack access to an ongoing source of primary care, and therefore to essential clinical preventive services as well as to episodic health care. In 1989, an estimated 30 to 37 million Americans were without any form of health insurance. Many more are underinsured or are covered by insurance programs with requirements and payments that providers are increasingly reluctant to accept. In many areas, access to primary care is limited by an inadequate supply of primary care providers due to overspecialization and maldistribution of physicians combined with inadequate numbers of and practice restrictions on mid-level providers (e.g., nurse practitioners, physician assistants). Other factors limiting access to primary care include geographic barriers (e.g., distance in rural areas), language and cultural barriers, restrictive hours of service availability, inadequate child care options, and lack of transportation. These barriers disproportionately affect the poor, the near poor, and racial and ethnic minorities, contributing to the burden of excess morbidity and mortality experienced by these groups.

Even when access to primary care is not an issue, many clinical preventive services are not offered by health care providers at recommended intervals. Consequently, few, if any, individuals receive all of the services that would benefit them. High on the list of barriers is the lack of reimbursement or financing. Few preventive services are covered under existing insurance policies or plans, despite their proven effectiveness in improving health. Numerous other barriers to the delivery or use of preventive services have been identified including uncertainty among health care providers about which services to offer, practice organization characteristics that are not conducive to the delivery of preventive services (e.g. lack of time, too few allied health professionals, limited access to medical record systems organized for prevention), and inadequate knowledge among consumers to create the necessary demand.

Health Status Objective

21.1* **Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)**

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*	*Percent Increase*
21.1a	**Blacks**	**56**	**60**	
21.1b	**Hispanics**	**62**	**65**	
21.1c	**People aged 65 and older**	**12**†	**14**†	

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Baseline data source: National Vital Statistics System and the National Health Interview Survey (special analysis), CDC.[9]

Clinical preventive services have an important role to play in reducing preventable illness, injury, disability, and premature death in the United States. Achieving the objectives in this priority area will help to attain the health status objectives found in other chapters. However, in keeping with the comprehensive (as opposed to categorical) nature of the objectives in this chapter, a comprehensive measure of health has been proposed to track the overall impact of the Nation's efforts to increase access to and use of clinical preventive services. Although other factors such as advances in treatment or improvements in community-based interventions can influence this measure of the Nation's health, achieving the objectives in this priority area can contribute to a substantial increase in years of healthy life.

In recent years, considerable effort has been devoted to developing a comprehensive measure of the population's health that combines morbidity and mortality. Without such a measure, efforts to monitor the Nation's health, identify health priorities, evaluate the effectiveness of interventions, and compare the relative effectiveness of alternative interventions are hindered. While several approaches have been developed, the quality-adjusted life year (QALY) has emerged as one of the most commonly used health status measures that includes both mortality and morbidity.[9] This measure is sensitive to changes in health both among the well and the ill, and increasingly is being used in cost-utility studies.

The calculation of years of healthy life (quality-adjusted life years) requires two sets of data. First, a life table of the population (as is used to calculate life expectancy) is needed. Life tables specify the proportion of people living and dying in each age interval and the average number of years of life remaining at the beginning of each age interval. Also needed are age-specific estimates of the well-being of a population comparable to the population represented by the life table. The measures of well-being include measures of mental, physical, and social functioning. For example, social functioning may be measured in terms of an individual's limitation in performing his or her usual social role whether this be work, school, or housework; physical functioning may be measured in terms of being confined to bed, chair, or couch due to health reasons.

By multiplying the measure of well-being by the number years of life remaining at each age interval, an estimate of the years of healthy life for a population can be derived. The baseline estimates are based on data from the 1979 and 1980 National Health Interview Survey, which covers the civilian non-institutionalized population, and on other data representing institutionalized populations in the United States. The Quality of Well-Being Scale was used as the model for developing national estimates of well-being.

In 1980, life expectancy at birth for the U.S. population was 73.7 years. This implies that everyone lived in a state of full functioning throughout the duration. In reality, people have various acute and chronic illness episodes at various times during their lifetimes that are not reflected in a measure that is only based on mortality. Accounting for these episodes yields 62 years of healthy life for the total population. For blacks, a life expectancy at birth of 68 years translates to 56 years of healthy life. For Hispanics, a life expectancy at birth of about 75 years translates to 62 years of healthy life. While people aged 65 and older have 16.4 years of life remaining on average, they have about 12 years of healthy life remaining.

Targets for the year 2000 were estimated by modeling the effects that changes in both life expectancy and well-being from 1980 to 1987 would have on the number of years of healthy life. These estimated changes in years of healthy life over a 7-year interval were used to project the number of years of healthy life that might reasonably be expected in the year 2000.

This objective seeks to increase years of healthy life for the total population by 3 years—to 65 years—by the year 2000. Although this increase will most likely be attained through a combination of decreased mortality and increased well-being, the intent of the objective is to foster health promotion and disease prevention activities directly aimed at improving the health-related quality of life of the U.S. population.

Use of the years of healthy life indicator represents an innovation in the type of measures used to portray the health of the Nation. The methods and data used for setting baseline estimates and for arriving at year 2000 targets are currently in developmental stages. Over the coming decade, limitations of both methods and data will be addressed. As a result, the estimates provided here may change. However, the tradeoffs between quantity and quality of life are becoming increasingly critical. Thus, even though the targets may be revised as a result of methodological refinements, years of healthy life is such an informative indicator that it was considered important to include in this report.

*This objective also appears as Objective 8.1 in *Educational and Community-Based Programs* and as Objective 17.1 in *Diabetes and Chronic Disabling Conditions*.

Risk Reduction Objective

21.2 Increase to at least 50 percent the proportion of people who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Special Population Targets

	Receipt of Recommended Services	*Baseline*	*2000 Target*
21.2a	**Infants up to 24 months**	—	**90%**
21.2b	**Children aged 2-12**	—	**80%**
21.2c	**Adolescents aged 13-18**	—	**50%**
21.2d	**Adults aged 19-39**	—	**40%**
21.2e	**Adults aged 40-64**	—	**40%**
21.2f	**Adults aged 65 and older**	—	**40%**
21.2g	**Low-income people**	—	**50%**
21.2h	**Blacks**	—	**50%**
21.2i	**Hispanics**	—	**50%**
21.2j	**Asians/Pacific Islanders**	—	**50%**
21.2k	**American Indians/Alaska Natives**	—	**70%**
21.2l	**People with disabilities**	—	**80%**

The effectiveness of preventive services in reducing morbidity and premature mortality is well documented. Yet the full public health benefit to be derived from clinical preventive services remains to be achieved. Many clinical preventive services are underutilized. Few, if any, individuals receive all of the services that would benefit them. Furthermore, many of those most in need of clinical preventive services are least likely to receive them.

No reliable national estimates are available on the extent to which individuals receive complete or even minimal sets of essential preventive services. Only a few studies have examined the receipt of services either as sets or in series. For example, the Rand Health Insurance Study found that although 93 percent of newborns had received at least one well-child examination, only 44 percent had received three or more doses of diphtheria-pertussis-tetanus (DPT) vaccine and three or more doses of polio vaccine by age 18 months.[30] An ambulatory care quality assurance study also found well-child care inadequate in delivering complete sets of recommended preventive services.[40]

Analysis of data from the National Health Interview Survey revealed significant increases in the use of eight routine preventive services among adults and children between 1973 and 1982.[8] The study also found that low-income people, people with low levels of education, and people of Hispanic origin were among the least likely to have ever received all eight screening procedures.

National Health Interview Survey data were also used to examine the extent to which women aged 45 through 64 received four recommended preventive services at appropriate intervals: blood pressure check, clinical breast examination, Pap test, and glaucoma screening.[45] Only 42 percent of women received adequate screening for all four conditions. Screening was least adequate among the poor, the less educated, and those living in rural areas; only 33, 34, and 38 percent, respectively, were screened for all four conditions. The strongest predictor of failure to receive recommended screening tests was lack of health insurance.

Access to optimal preventive care for the indigent and minorities may be further compromised by the type of settings in which they seek care. Physicians who serve more than a 50-percent minority Medicaid patient population see more patients, spend less time with each patient, and tend to incorporate fewer preventive practices into their encounters with patients than do physicians who have more affluent, predominantly white patients.[12]

This objective seeks to increase the proportion of Americans who receive a minimum set of recommended clinical preventive services: the age-, gender-, and risk-appropriate services recommended by the U.S.Preventive Services Task Force.[44] However, for reasons of attainability and tracking, this objective specifically targets a subset of the services recommended by the U.S. Preventive Services Task Force: all of the age- and gender-appropriate screening and immunization services and at least one age- and gender-appropriate counseling service. The receipt of risk-appropriate services and the receipt of all recommended counseling services will not be tracked. Baseline data are unavailable even for this subset of recommended services, however. But baseline estimates are available for many of the individual services, and the baseline estimate for any age group can be no higher than the estimate for the least utilized service recommended for that age group. For most age groups, immunizations appear to be the least utilized service (e.g., a tetanus-diphtheria booster within the preceding 10 years for people aged 13-18, 19-39, 40-64, and 65 and older; a pneumococcal vaccine and annual influenza vaccine for people aged 65 and older). Thus, the baseline estimates for this objective are largely driven by immunization rates (see *Immunization and Infectious Diseases)*, and the age group targets have been set accordingly. Although the baseline estimates for low-income and racial and ethnic minority groups are likely lower than that for the total population, the targets for racial and ethnic minorities have been set at least equivalent to the overall population target to eliminate any gap in the receipt of a minimum set of essential clinical preventive services. Higher targets were established for American Indians and Alaska Natives and people with disabilities because of the opportunities these groups have for interaction with the Indian Health Service and the health care system, respectively.

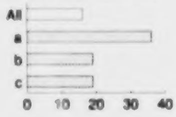
Services and Protection Objectives

21.3 Increase to at least 95 percent the proportion of people who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: Less than 82 percent in 1986, as 18 percent reported having no physician, clinic, or hospital as a regular source of care)

Special Population Targets

	Percentage With Source of Care	*1986 Baseline*	*2000 Target*
21.3a	**Hispanics**	70%	95%
21.3b	**Blacks**	80%	95%
21.3c	**Low-income people**	80%	95%

Percent Increase



Baseline data source: The Robert Wood Johnson Foundation 1986.

Access to clinical preventive services depends in part on access to an ongoing source of primary care. Increasing access to primary care can help to increase access to clinical preventive services for many of those most in need of these services. Ideally, access should be to a well-organized system of primary care, staffed by well-trained primary care providers, with established and well-functioning networks into the community.

In 1986, 18 percent of Americans—43 million Americans overall—reported having no physician, clinic or hospital as a regular source of medical care.[42] Sixteen percent reported needing health care but having difficulty obtaining it. The uninsured were almost twice as likely to be without a regular source of care as the insured—31 percent and

16 percent, respectively. Twenty percent of the poor (family income below 150 percent of the poverty level) reported no regular source of care. Blacks were less likely to have a regular source of care than whites, 20 percent compared to 16 percent. Between 1982 and 1986, the percentage of Hispanics reporting no regular source of care tripled from 10 percent to 30 percent. Urban and rural dwellers experience approximately equal access to the health care system.[42]

Even among Americans with a regular source of care, many lack access to a well-organized system of competent primary care. Competent primary care focuses on the health needs of individuals and families; is the "first contact" health care in the view of the patient; provides at least 80 percent of necessary care; provides a comprehensive array of services, on site or through referral, including health promotion and disease prevention as well as curative services; and is accessible and acceptable to the patient population. Primary care is typically rendered by general practitioners, family practitioners, internists, pediatricians, obstetrician/gynecologists, and mid-level practitioners (e.g., physician assistants, nurse practitioners). The primary care provider coordinates services for the family and patient; accepts continuing responsibility for the patient regardless of the presence or the type of diseases; provides continuity of care, with linkages to secondary and tertiary care; attempts to integrate and coordinate all of the physical, psychological, and social aspects of patient care; and is responsible for the quality and potential effects of the services. This type of care emphasizes caring for the patient's general health needs as opposed to a more specialized or fragmented approach to medical care. The concepts of comprehensiveness of services, coordination of services, and continuity of care are essential.[1,22,36,38,46]

Studies have demonstrated that comprehensive public/private collaborative community efforts can reduce access barriers to primary care and increase use of preventive services.[4,23,32,43] Several recent studies with discrete populations of underserved or uninsured and underinsured individuals have demonstrated improved health outcomes and reductions in inappropriate use of emergency services following increased access to primary care.[24]

21.4 Improve financing and delivery of clinical preventive services so that virtually no American has a financial barrier to receiving, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

A primary and often-cited barrier to the utilization of clinical preventive services is financial. Financial barriers can be reduced in several ways. These approaches reflect the multiple sources of financing for clinical preventive services—out-of-pocket payments by individuals, direct provision of services by public health clinics and programs, sponsorship by employers at the worksite, delivery by primary care providers in the context of a managed care program, or reimbursement as part of a conventional health insurance package.

For many Americans, out-of-pocket payments are currently the major source of financing for clinical preventive services. Consumers and providers alike list cost as a barrier to greater use of these services. However, a number of preventive services can be efficiently incorporated into routine acute and chronic disease care by primary care providers at little or no increased cost to consumers. Furthermore, many preventive services can be offered at lower cost to individuals when services are efficiently organized, take advantage of economies of scale, and rely more on allied health professionals for delivery. For example, although current charges for screening mammography average $80 to $100 and can run as high as $200, several studies have shown that high-quality screening mammography services can be delivered for under $50 per mammogram.[41] Relative increases in the median per capita income can also reduce the financial barriers associated with out-of-pocket payments for preventive services.

The direct provision of clinical preventive services by publicly funded programs is an important mechanism for overcoming financial barriers, especially for low-income populations (see Objective 21.5).

Private and public insurance coverage for clinical preventive services and managed care plans such as Health Maintenance Organizations (HMOs) and Preferred Provider Arrangements/Organizations (PPAs/PPOs) can also reduce financial barriers. General principles of economics suggest and a number of empirical studies confirm that people utilize preventive services more when the out-of-pocket cost is reduced through insurance coverage or managed care. A study of preventive service usage in health maintenance organization (HMO) and fee-for-service settings concluded, "... the greater number of preventive services among HMO enrollees seems ... to result from the lower price patients face ... the system most likely to maximize the number of prevention services is fee-for-service practice with complete ambulatory insurance coverage."[29] In a controlled trial comparing the practice patterns of a fully insured HMO to fee-for-service practice, HMO members received a significantly higher level of preventive services.[31] Finally, in the Rand Health Insurance Experiment, women with full insurance had a higher utilization rate for Pap tests compared to women who had cost-sharing plans.[30]

Data are limited on the extent to which out-of-pocket costs for clinical preventive services are currently reduced through private or public health insurance coverage or managed care plans. It appears, however, that many of the services recommended by the U.S. Preventive Services Task Force are not covered under private or public health insurance plans of the conventional or indemnity type in particular.

Roughly 83 percent of the U.S. population has some form of privately financed health insurance coverage or managed care plan. More than two-thirds of all insured people rely exclusively on private insurance.[37] Although most private health insurance plans are of the conventional or indemnity type, an increasing proportion of Americans receive their health care coverage through HMOs, PPOs, or other managed care plans. Over 30 million Americans younger than age 65, or nearly 20 percent of individuals covered by private insurance, receive their health care coverage through HMOs.

The vast majority of private health insurance and managed care is purchased for groups, primarily by employers. In 1988, 63 percent of Americans were covered through employer-sponsored group health insurance plans.[6] Of these, 71 percent had health care coverage through a conventional or indemnity plan, 18 percent through an HMO, and 11 percent through a PPO.[11] Data on the extent to which preventive services are covered by employer-sponsored group health insurance are provided by a 1988 survey of a nationally representative sample of employers (see Figure 21.4).[16] The survey results represented

	Adult Physical Exams	*Well-Baby Care*	*Preventive Diagnostic Tests*
Conventional plan	27%	45%	61%
PPO	39%	62%	72%
HMO	97%	98%	98%
All plans*	41%	56%	69%
Estimated percentage of all Americans	26%	35%	43%

**Weighted average*

Fig. 21.4

Percentage of people with employer-sponsored health insurance coverage for selected clinical preventive services

84 percent of employer-provided group health insurance; only federal employees and individuals who obtained their insurance through a union or professional association were not included in these estimates. Specific data on coverage for services recommended by the U.S. Preventive Services Task Force are not available.

A second survey in 1988 of 259 HMO plans with over 21 million enrollees found that 97 to 100 percent of established plans covered well-baby care, childhood immunizations, routine physicals, Pap tests, mammography, influenza vaccination, and other adult immunizations.[15] About 85 percent covered nutrition counseling and 73 percent covered health education classes.

Employers who elect to provide preventive service benefits often do so in the belief that covering these services will provide a substantial return on investment over time, and because preventive services are a positive, low-cost alternative to other cost-containment benefit plan changes that employees dislike, such as higher coinsurance and deductibles.[10] Many group purchasers, however, hesitate to add coverage for preventive services because of uncertainty about the incremental costs of such actions. Because some preventive services are presently reimbursed as curative services, it is difficult for actuaries to accurately estimate incremental costs until more of their group customers have added such services.

Of the 83 percent of Americans covered by health insurance, one-third are covered through the public sector by the Medicare and Medicaid programs. Medicare is a Federal Government program serving those over 65 years of age and people with disabilities. When Medicare was established in 1965, it covered no preventive services. Currently, three preventive services are specifically identified as covered services: pneumococcal vaccine, hepatitis B vaccine for high-risk individuals, and Pap tests every three years for women (or more frequently for women at high risk). Coverage of influenza immunizations is currently under study.

Medicaid is a State-run, federally subsidized program that serves certain groups of low-income individuals, including many women and children. Under Medicaid, States are mandated to provide a basic set of services to enrollees. One required service, the Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) program, provides a comprehensive range of health care services to eligible children under age 21. Available services include comprehensive and periodic medical and dental assessment and vision, dental, and hearing treatment services as provided by State Medicaid plans.

In addition, nearly 2 million Medicare beneficiaries and 2.5 million Medicaid beneficiaries are enrolled in HMOs or similar managed care plans and have more extensive coverage of preventive services as a benefit. Federally-qualified HMOs are required to provide, at a minimum, periodic health examinations for adults, well-child care from birth, eye and ear examinations for children through age 17, and pediatric and adult immunizations. Although by statute the Medicare program does not cover most preventive services, more than 80 percent of Medicare-contracting HMOs offer routine physicals (which may include preventive services) to their Medicare enrollees. No further expansion of Medicare and Medicaid benefits by Federal statute is currently planned, but several studies of health financing reform are underway that may have implications for preventive services.

The recommendations of the U.S. Preventive Services Task Force[44] can provide scientifically sound guidance to health insurers and purchasers of group plans regarding which preventive services, at a minimum, to cover. Implementation of this objective could be facilitated by additional information about (1) the potential health benefits to be achieved among insured groups by providing these services, (2) the incremental costs and full range of benefits likely to result from coverage of these services, and (3) the relative cost-effectiveness of these services. Information about the effectiveness of a set of preventive services in achieving a given intervention outcome in relation to costs is important in making decisions about insurance and program coverage. Such analyses help public and private payers to compare and rank choices among services according to the magnitude of their short- and long-term effects relative to costs. Models to protect against overutilization of preventive services in the face of increased coverage could also facilitate implementation of this objective. Finally, educational efforts to increase consumer demand for clinical preventive services could help to reduce perceived barriers, increase consumer willingness to pay for these services relative to other goods and services, and increase their utilization.

21.5 Assure that at least 90 percent of people for whom primary care services are provided directly by publicly funded programs are offered, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

Note: Publicly funded programs that provide primary care services directly include federally funded programs such as the Maternal and Child Health Program, Community and Migrant Health Centers, and the Indian Health Service as well as primary care service settings funded by State and local governments. This objective does not include services covered indirectly through the Medicare and Medicaid programs.

Publicly funded providers of health care serve various high-risk groups and derive their funds from several sources. Federal support is provided to the Maternal and Child Health program, Community and Migrant Health Centers, the National Health Service Corps, the Indian Health Service (IHS), and the Department of Veterans Affairs, among others. State and local governments also provide funding for primary care service settings, which present an opportunity to provide preventive services.

The Maternal and Child Health Block Grant Program provides Federal and matching State funds to enable States to promote health; prevent death, disease, and disability; and ensure access to high-quality, comprehensive, and coordinated systems of care for mothers, children, and other family members, particularly those with low incomes or limited access to care. Children with special health care needs due to chronic or disabling conditions also are included. Most States use a mix of service delivery mechanisms to provide screening, counseling, and immunization services for these populations. Services may be provided through local health departments, community health centers, private physicians, school-based clinics, and State-administered clinics.

The federally supported Community and Migrant Health Center and Health Care for the Homeless programs both deliver preventive services as part of comprehensive primary care. Currently, several categories of preventive services must be offered to clients through the Community and Migrant Health Center program, and additional services are provided, as required, to meet the needs of specific individuals or populations. Specific preventive services have been initiated to target underserved women and their children, populations at risk for HIV infection, HIV-infected people, and intravenous drug users. Where the services are high technology and high cost and not within the purview of the center, the center cannot necessarily assure these services at low cost to the consumer.

IHS provides preventive services through clinical staff on reservations and through community health personnel, forming integrated health teams that work within the Indian community. Services provided in these settings include prenatal, postnatal, and well-baby care; family planning; dental health; nutrition; immunizations; environmental health activities; and health education. IHS has an integrated approach to preventive care that combines community health nursing, dental health, medical social work, environmental health, and health education.

These and other publicly funded providers of health care services, such as the numerous State- and county-funded community programs, offer a wide range of opportunities to expand the range of preventive services offered. The recommendations of the U.S. Preventive Services Task Force[44] can provide scientifically sound guidance to publicly funded providers of health care regarding which preventive services to offer, at a minimum, to their clients. Additional information about the potential public health benefits and the relative cost-effectiveness of these services could facilitate implementation of this objective.

21.6 Increase to at least 50 percent the proportion of primary care providers who provide their patients with the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

Primary care providers are optimally positioned in the health care system to provide preventive services. The public views physicians in particular as credible sources of health information. In 1987, Americans visited a physician an average of 5.3 times per year, and 76 percent of all people reported visiting a physician within the preceding year.[35] Many of those visiting a physician are especially in need of preventive services (68 to 80 percent), including smokers, women, low-income individuals, minorities, and older people. Furthermore, with return visits accounting for 73 to 85 percent of primary care encounters, primary care providers have the opportunity to deliver multiple preventive services and continued follow-up to individuals in need of these services.[14,35]

Primary care providers include general practitioners, family physicians, internists, pediatricians, obstetrician-gynecologists, physician assistants, nurse practitioners, and nurses. Advice from other health professionals (e.g., tobacco cessation counseling by oral health care providers, nutrition counseling by qualified dietitians) reaches even more people and serves to reinforce important messages for many patients. An interdisciplinary team approach to the provision of clinical preventive services is optimal.

Although most physicians regard preventive services as important,[13] they tend to underuse them. A recent meta-analysis of multiple physician surveys, chart audit studies, and consumer surveys found that average physician use of three recommended screening tests ranged from about 70 percent of patients for Pap smears to 50 percent for fecal occult blood testing to only 10 to 20 percent for screening mammography.[27] Administration of adult immunizations was found to be quite low, 20 percent or less for influenza, pneumococcal, and tetanus immunizations. Although physicians were somewhat likely to provide counseling about smoking (for 50 to 60 percent of patients) and diet (40 to 50 percent of patients), they were much less likely to counsel patients about exercise (30 percent), alcohol (30 percent), or seat belt use (less than 20 percent). The proportion of physicians who counsel all patients at risk, at every visit, for at least 3 minutes, is considerably lower.[28] Finally, even when physicians do intervene with counseling, they rely on health education techniques that alone are ineffective in altering habits and behavior, they seldom offer more effective behavior change treatments, and they rarely refer patients elsewhere for assistance.[39]

Reasons given by physicians for their failure to practice more prevention include lack of time (70 percent), inadequate reimbursement (60 percent), and "unclear recommendations" (58 percent).[13] Other barriers include a lack of familiarity with current recommendations; attitudinal barriers such as lack of confidence, unrealistic expectations, and mistaken beliefs about efficacy; and lack of basic behavioral science skills and training.[26] Some of these barriers can be overcome through appropriate professional preparation and continuing education. Several randomized controlled trials have shown that physician compliance with disease prevention and control regimens can be improved with office reminder systems.[7,33,34] Among the tools used in practice are chart reminders and flowsheets, cues on computerized patient records, patient-held minirecords, and various forms of performance feedback.[5] Effectiveness in increasing the use of preventive services can be further enhanced by appropriate client tracking systems.

21.7 Increase to at least 90 percent the proportion of people who are served by a local health department that assesses and assures access to essential clinical preventive services. (Baseline data available in 1992)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

The Institute of Medicine (IOM) report *The Future of Public Health* acknowledged past public health successes but described in detail problems within the U.S public health system.[25] The AIDS epidemic, which threatens the health of millions of Americans, has also brought the inadequacies of our public health system into high visibility. That same system is in critical need of improvement if the Nation is to address not only AIDS, but the burden of chronic diseases in our aging population and injuries and violence to our young. Both the Presidential Commission on HIV Infection and the IOM report outline steps necessary to strengthen the public health system and call for a plan of action for improvements. The desired outcome is a public health system effectively performing the core functions of public health agencies, which the IOM report identifies for all levels of government as assessment, policy development, and assurance. Specifically, with respect to access to care and clinical preventive services, public health agencies should (1) regularly and systematically collect, assemble, analyze, and make available information on the extent to which their constituents have full access to primary care and clinical preventive services, and (2) exercise their responsibility to serve the public interest in the development of comprehensive public health policies to assure their constituents' access to primary care and delivery of essential clinical preventive services.

The current public health system is built around a system of governmental agencies—primarily Federal, State, and local health departments. Other critical participants in the system include clinical medicine, voluntary agencies, schools and universities, business and industry, professional associations, community organizations, and third-party payers. A governmental presence is needed at the local level to provide the leadership to assure that necessary services are provided. Consensus must be developed and institutionalized on the appropriate roles, attributes, and standards of effective performance of all parties within the public health system to fully realize the benefits of primary care and clinical preventive services.

The public health community has recognized these problems and has initiated three landmark actions that have helped focus opinion on the need for definition and consensus with respect to the public health and health care systems. In 1979, the publication of *Model Standards: A Guide for Community Preventive Health Services* advanced the concept of a governmental presence at the local level to assure the public's health.[2] In 1988, *The Future of Public Health* proposed the core functions of public health.[25] In 1989, the U.S. Preventive Services Task Force published the *Guide to Clinical Preventive Services*.[44]

In addition, the 1990 objectives played an important role by providing direction and focus to the efforts of the public health system. However, the objectives did not specifically address the inadequacies in the system itself that might adversely affect their achievement. A public health system effectively carrying out the core functions will assure that scarce public health resources are directed to address identified health problems of high priority. If achievement of the year 2000 national health objectives is to be a reality, there must be a public health system with the capacity to effectively carry out the necessary strategies. This cross-cutting objective will help to assure the existence, effectiveness, and appropriate distribution of that capacity.

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

Degrees Awarded To:	*1985-86 Baseline*	*2000 Target*
Blacks	**5%**	**8%**
Hispanics	**3%**	**6.4%**
American Indians/Alaska Natives	**0.3%**	**0.6%**

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

Baseline data source: Bureau of Health Professions (HRSA).

Minority and disadvantaged communities lag behind the U.S. population on virtually all health status indicators. Furthermore, among the poor, minorities, and the uninsured, access to medical care has been deteriorating.[42] Increasing the number of minority health professionals may offer a partial solution to this public health crisis. Several studies have shown that underrepresented minority health profession graduates are more likely to enter primary care specialties and to voluntarily practice in or near designated primary care health manpower shortage areas.[18,19,20,21] In one study, 75 percent of black physicians were practicing in or near shortage areas, 90 percent had patient loads that were at least 50-percent minority, two-thirds had 70-percent minority patient loads, and one-third had 90-percent minority loads. Similarly, of Chicanos graduated from California medical schools, 75 percent chose to practice in or near designated shortage areas. Analyses of the regional distribution patterns of minority physicians show that the distribution patterns for black and American Indian physicians in particular appear to be influenced by the location of substantial numbers of like minorities.[19] It is estimated that 60 to 80 percent of the underrepresented minority students trained in the health professions voluntarily practice in or close to designated shortage areas with overwhelmingly minority patient populations.[21]

According to the 1980 census, members of racial and ethnic minority groups accounted for about 20 percent of the U.S. population: blacks accounted for an estimated 11.5 percent, Hispanics 6.4 percent, Asians and Pacific Islanders 1.5 percent, and Native Americans and Alaska Natives 0.6 percent. In the year 2000, racial and ethnic minorities are expected to comprise a little more than 25 percent of the population, with blacks and Hispanics accounting for more than 13 and 9 percent, respectively.

Though comprising a sizeable portion of the population, some minorities are not well represented among health and allied and associated health personnel. It is estimated that, in 1987, blacks accounted for only about 3 percent of practicing allopathic and osteopathic physicians, 2 percent of dentists, 4 percent of registered nurses, 7 percent of therapists, and 2 percent of dental hygienists. Hispanics were estimated to comprise about 5 percent of practicing physicians, 3 percent of dentists, and 1 percent of registered nurses.[17]

Although fewer than 1 in 10 undergraduates were from a minority group in the late 1960s, minorities dramatically increased their numbers in colleges and universities during the 1970s and early 1980s. By the academic year 1984-85, more than 1 in 6 undergraduate students and more than 1 in 9 students in graduate-level first professional degree programs were minorities.[18] (First professional degree programs include dentistry, medicine, optometry, osteopathic medicine, pharmacy, podiatry, veterinary medicine, chiropractic, law, and theological professions.)

In academic year 1985-86, underrepresented minorities comprised 8.3 percent of the graduates from schools of public health, 9.1 percent of the graduates from schools of allopathic medicine, 3.7 percent of schools of osteopathic medicine, and 7.2 percent of the graduates from schools of dentistry. Underrepresented minorities totaled 8 percent of the graduates of registered nurse (RN) baccalaureate programs in 1984-1985. Of those graduating from schools of medicine, schools of osteopathic medicine, schools of dentistry, and RN baccalaureate programs, blacks comprised 5.1, 1.5, 4.0, and 5.3 percent, respectively. Hispanics constituted 3.7 percent of the graduates from schools of medicine, 1.4 percent of the graduates from schools of osteopathic medicine, 3.1 percent of the graduates from schools of dentistry, and 2.4 percent of the graduates from RN baccalaureate programs. Only 0.3, 0.8, and 0.2 percent of the graduates from schools of medicine, osteopathic medicine, and dentistry, respectively, were Native Americans.[3,18,20]

Total enrollment figures for 1986-87 place the enrollment for underrepresented minorities at 8.7 percent in schools of allopathic medicine, 5.1 percent in schools of osteopathic medicine, and 10.1 percent in schools of dentistry. Of those enrolled in schools of allopathic medicine, osteopathic medicine, and dentistry, blacks comprised 5.9, 1.8, and 5.5 percent, respectively. Hispanics accounted for 5.3 percent of the enrollment in schools of allopathic medicine, 2.7 percent of the enrollment in schools of osteopathic medicine, and 4.3 percent of the enrollment in schools of dentistry. Native Americans comprised 0.4 percent of the enrollment in schools of allopathic medicine, 0.6 percent of the enrollment in schools of osteopathic medicine, and 0.3 percent of the enrollment in schools of dentistry. The most recent enrollment figures for schools of public health are for 1987-88. At that time, underrepresented minorities constituted 13.9 percent of total enrollment, with blacks representing 6.2 percent; Hispanics, 6.7 percent; and Native Americans, 1.0 percent, respectively.

Despite considerable effort to increase the number of minorities in health professional and allied and associated health professional schools, the rate of increase in the number of minority entrants, enrollees, and graduates has been slowing since the mid-1970s. Although the absolute number of underrepresented minorities entering, enrolled in, and graduating from many of these schools has increased, the percentage of these minorities in the universe of entrants and graduates has changed very little. The targets set for the year 2000 present a significant challenge. Attaining this objective will require an expansion of the following activities: financial assistance for minority students to pursue health care degrees; mentor relationships; early recruitment, such as expansion of the Health Careers Opportunities Program; and increasing minority faculty and administrative staff in schools that train health care professionals.

Personnel Needs

Priorities for ensuring an adequate supply of personnel to achieve the objectives addressing clinical preventive services over the next decade include the following:

- Establish the number and types of health professionals, including allied/associated health fields, who are needed to accomplish the practice, educational, and research aspects of the clinical preventive services objectives.
- Provide sufficient, appropriate curricular content in clinical preventive services in all schools and programs preparing students for careers in the health professions, including allied/associated health fields, and ensure that all graduates of such schools and programs can demonstrate knowledge of these subjects.
- Increase the provision of continuing education on clinical preventive services by national professional associations whose members have roles in increasing access to and/or delivery of clinical preventive services.

Surveillance and Data Needs

Availability of Future Data

Periodic surveys and/or supplements to existing surveys can help to track Objectives 21.1, 21.2, 21.3, and 21.8.

New surveillance systems are needed to track Objectives 21.4, 21.5, 21.6, and 21.7.

High Priority Needs

- A periodic survey of primary care providers is needed to monitor the behavior of practicing clinicians regarding provision of preventive services, particularly those recommended by the U.S. Preventive Services Task Force.
- The extent of health insurance coverage for preventive services should be routinely tracked.
- Periodic surveys of health professional and allied/associated health professional training are also needed.

A critical problem is the lack of comprehensive and reliable data on the public health workforce. Few definitive statements can be made about personnel utilization, shortage areas, and training needs. One major difficulty is the absence of standard definitions for many occupational categories. Even given established credentials, as in the case of board certification for preventive medicine physicians, reporting is inconsistent (e.g., on some occasions only board-certified preventive medicine physicians are counted, and on other occasions all physicians who state their specialty as preventive medicine are counted). Precise definitions need to be formulated and used consistently to make quantification of the public health workforce possible.

Research Needs

Gaps in the scientific evidence identified in the U.S. Preventive Services Task Force's *Guide to Clinical Preventive Services* underscore the magnitude of the research agenda in preventive medicine. For many of the topics evaluated in the *Guide*, the Task Force found inadequate evidence to evaluate their effectiveness or to determine their optimal frequency of delivery. In many cases, the necessary studies had never been performed. In other instances, studies performed lacked reliability due to improper study design or systematic biases. Better quality research, not merely more research, to evaluate the effectiveness of clinical preventive services is warranted. High priority research needs include:

- The impact of clinical preventive services on quality of life, not just survival.
- The efficacy, effectiveness, optimal frequency, and efficiency (i.e., cost-effectiveness) of clinical preventive services.
- The utilization of clinical preventive services.
- The impact of incentives and different forms of reimbursement on the implementation of clinical preventive services in primary care.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.12 Clinician counseling about physical activity

Nutrition

2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Family Planning

5.10 Age-appropriate preconception counseling by clinicians

5.11 Clinic services for HIV and other sexually transmitted diseases

Mental Health and Mental Disorders

6.13 Clinician review of patients' mental functioning

6.14 Clinician review of children's mental functioning

Educational and Community-Based Programs

8.12 Hospital-based patient education and community health promotion promotion

Unintentional Injury

9.21 Injury prevention counseling by clinicians

Occupational Safety and Health

10.15 Clinician assessment of occupational health exposures

Food and Drug Safety

12.6 Medication review for older patients

Maternal and Infant Health

14.11 Prenatal care

14.12 Age-appropriate preconception counseling by clinicians

14.13 Counseling on detection of fetal abnormalities

14.15 Newborn screening and followup

14.16 Primary care for babies

Heart Disease and Stroke

15.13 Blood pressure screening

15.14 Blood cholesterol screening

15.15 Appropriate diet and, if necessary, drug therapy for high blood cholesterol

Cancer

16.10 Tobacco, diet, and cancer screening counseling by clinicians

16.11 Breast examinations and mammograms

16.12 Pap tests

16.13 Fecal occult blood tests and proctosigmoidoscopy

16.14 Oral, skin, and digital rectal examinations

Diabetes and Chronic Disabling Conditions

17.14 Patient education for chronic and disabling conditions

17.15 Clinician assessment of child development

17.17 Clinician assessment of cognitive and other functioning in older adults

17.18 Counseling about estrogen replacement therapy

HIV Infection

18.9 Clinician counseling to prevent HIV and other sexually transmitted diseases

Sexually Transmitted Diseases

19.13 Correct management of sexually transmitted disease cases

19.14 Clinician counseling to prevent sexually transmitted diseases

Immunization and Infectious Diseases

20.11 Immunizations

20.14 Counseling about immunization by clinicians

20.15 Financial barriers to immunizations

Surveillance and Data Systems

22.4 Gaps in health data

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Surveillance and Data Systems

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22.5 Periodic analysis and publication of data
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22.7 Timely release of national data

22. Surveillance and Data Systems

Introduction

Public health surveillance is the systematic collection, analysis, interpretation, dissemination, and use of health information. Achievement of the objectives outlined in this chapter would help improve the coverage, detail, and usefulness of public health data systems and guide public health into the 21st century. These surveillance and data systems provide information on morbidity, mortality, and disability from acute and chronic conditions; injuries; personal, environmental, and occupational risk factors associated with illness and premature death; preventive and treatment services; and costs. This information is used to understand the health status of the population and to plan, implement, describe, and evaluate public health programs that control and prevent adverse health events. To be of maximum usefulness, public health data must be accurate, timely, and available in a usable form.

The Public Health Service (PHS) plays an important role in the development and conduct of surveillance and data collection. PHS activities include:

- Collecting and analyzing health information at the national, regional, and when possible, State and local levels.
- Providing data to other Federal, State, and local agencies for further analysis or use.
- Assisting States and local agencies in conducting public health surveillance and evaluating data by providing standards, definitions, methods, computer software, training, and coordination.
- Coordinating a network of Federal, State, and local public health surveillance for diseases of public health importance.

The Health Care Financing Administration supports these activities by providing the Agency for Health Care Policy and Research (of the PHS) and its grantees with Medicare data, data documentation, and expert technical advice concerning these data and procedures for their release. Support includes the provision of public use files and development of custom or special files for specific studies.

Although PHS takes the lead role in national public health data collection, it is only one partner within the larger structure necessary to collect national public health data. Surveillance often involves active cooperation among Federal, State, and local agencies. For example, the national vital statistics system obtains information on births, deaths, marriages, and divorces from all 50 States, New York City, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Programs in each State collect vital information from many sources in local communities, including funeral directors, medical examiners, coroners, hospitals, religious authorities, and justices of the peace. Other data collection systems, based on sample surveys rather than reports, depend upon the participation of thousands of private citizens nationwide. For example, the National Health Interview Survey is a continuing nationwide sample survey in which data are collected through personal household interviews. In 1987, the personal and demographic characteristics, illnesses, injuries, impairments, chronic and acute conditions, use of health resources, and other health topics were collected for approximately 123,000 people.[3]

The year 2000 health objectives were set, for the most part, using information from major national data systems. The table below displays the characteristics of some of the major sources of health information used to set the year 2000 national health objectives and illustrates the diversity of the national health data collection systems.

	Sample Size	*Historic Periodicity*	*Racial/ Ethnic Identifiers?*	*State Data Available?*
Adult Use of Tobacco Survey	12,000	P	BWO	N
Annual Survey of Occupational Injuries and Illnesses	290,000(a)	A	None	Y
Behavioral Risk Factor Surveillance System	1,700(b)	C	R,H	Y(l)
Continuing Survey of Food Intake by Individuals	2,600(c)	C	R,H	N
Current Population Reports	71,000(c)	C	R,H	Y
Fatal Accident Reporting System	TOTAL(d)	C	None	Y
Health and Diet Survey	3,200-4,000	P	R,H	N
Hispanic Health and Nutrition Examination Survey	12,000	O	R,H	N
High School Senior Survey (Monitoring the Future)	16,000-19,000	A	R,H	N
National Crime Survey	101,000	C	R,H	Y(l)
National Disease and Therapeutic Index	2,800/ 116,000(e)	C	R,H	N
National Fire Incident Reporting System	13,287(f)	C	None	Y
National Health Interview Survey	50,000-130,000	C	R,H	N
National Health and Nutrition Examination Survey	21,000(o)	P	R,H	N
National Hospital Discharge Survey	400/ 250,000(g)	C	R,H	N
National Household Survey of Drug Abuse	8,000	P	BWO,H	N
Linked Birth and Infant Death Data Set	TOTAL	C	R,H	Y
National Notifiable Diseases Surveillance System	TOTAL(m)	C	R,H(n)	Y
National Nursing Home Survey	1,000/5,200(h)	P	None	N
National Survey of Adolescent Males	1,900	P	R,H	N
National Survey of Family Growth	8,500	P	R	N
National Survey of Worksite Health Promotion Activities	1,400(i)	O	None	N
National Vital Statistics System	TOTAL	C	R	Y
Oral Health of United States Adults	20,800(j)	P	None	N
Oral Health of United States Children	39,200	P	BWO	N

Figure 22.1

Characteristics of selected national sources of baseline data for national health objectives

Note: Sources selected for inclusion are national data systems that provide baseline data for three or more objectives.

Key:

Periodicity:
- A: annual
- C: continuous
- P: periodic
- O: one time only

Race/ethnicity:
- R: white; black; Asian/Pacific Islanders; and American Indian, Eskimo, or Aleut
- BWO: black, white, and other
- H: Hispanic

(a) Industrial establishments
(b) Average per State
(c) Households
(d) Motor vehicle fatalities
(e) Physicians/drug mentions
(f) Fire departments
(g) Hospitals/medical records
(h) Nursing homes/current residents
(i) Worksites
(j) Two samples: 15,132 employed adults, aged 18-64; 5,686 retired adults, aged 65 and older
(k) In participating States only (41 States currently)
(l) Eleven largest States only
(m) All cases of 54 diseases reported
(n) Capacity varies by State
(o) Number of people examined; 25,000 interviewed

Development of the objectives for improving public health data systems was guided, in part, by experience gained from working with the 1990 objectives. When the 1990 objectives were set out in 1979, nearly 35 percent had no baseline data. By 1985, and publication of *The 1990 Health Objectives for the Nation: A Midcourse Review*, the proportion of objectives lacking baseline data had been reduced to 26 percent. In 1990, approximately 25 percent of the year 2000 objectives do not have baseline data; approximately one-third have a source of annual data for routine tracking of progress.

Some important health problems could not be addressed in the objectives for the year 2000 since no national data were available to accurately characterize the problems. In some cases, less than ideal data will be used, for example, in the environmental health area, gross measures of health status such as hospitalizations for asthma must be used to monitor progress in reducing the health effects of air pollution since more precise measures of the relationship between air pollution and illness are unavailable.

Another data concern is the ability to measure the health status of special populations. Morbidity, mortality, access to and use of health services, and health behavior vary markedly by age, race, gender, and socioeconomic status. Therefore, many preventive services and health promotion activities must be targeted toward racial and ethnic minorities, elderly people, and people with chronic disabilities. Almost all major national data systems now collect data on race and ethnicity (see table above). Most data systems regularly publish data on blacks and an increasing number of surveys now publish information on Hispanics. Many systems also collect data on socioeconomic status (income and/or education) and age. However, many data users want considerably more detailed information than is usually available. Expanding surveys to provide statistically reliable data for special population groups can be costly. For example, it cost approximately $2 million to oversample black women in cycle IV of the National Survey of Family Growth (a nationwide survey of the reproductive decisions and behaviors of American women). Without oversampling, the survey could not produce reliable national data for black women. The problem of sample size may be exacerbated at the State and local level where it may be more difficult for officials to commit additional funds for samples of sufficient size to provide data for special populations. Finally, administrative record data should be more fully utilized as an alternative source of information on minorities, although there are often problems with the quality of race and ethnicity information on such records.

State and local level data are essential for program managers and health care providers who must assess health status and services, and plan, carry out, and evaluate health programs. Many of the States will set their own year 2000 health objectives, coordinating them with community implementation of *Healthy Communities 2000: Model Standards, Guidelines for Community Attainment of the Year 2000 Objectives*. Generally, mortality statistics are the most readily available source of data at the State and local level. However, for many health problems, measures of mortality are not satisfactory. For example, among children, injuries and resulting disabilities are a major threat to health. Injury death rates do not adequately describe the problem or provide insights into how injury deaths and disabilities might be prevented. Consequently, national objectives for data system improvement must give particular attention to data collection and use at State and local levels. While additional population based surveys will be necessary, attention should also be given to using existing record based data (e.g., hospital records).

Issues in surveillance and data collection go beyond data coverage and detail. Even when needed data exist, not all potential users of these data have ready and timely access to the information, and not all users are equally able to use the data to full advantage. Some national data files are too large and complex for easy use, while others are simply not available for public use.

Many of the existing data systems suffer from the lack of comparability in how data are collected on common topics as well as in how data are presented to the public. Finally, there is still a general lack of agreement on what variables or indicators are the best measures of health status. The objectives set forth in this document represent many different ways of assessing the health status of a population, but there is a need for a smaller, more definitive set of indicators that would facilitate the comparison of the health status of different populations. The achievement of the objectives in this chapter would help improve the quality of health information and provide a sound data base as public health enters the 21st century.

Objectives

22.1 Develop a set of health status indicators appropriate for Federal, State, and local health agencies and establish use of the set in at least 40 States. (Baseline: No such set exists in 1990)

Baseline data source: National Center for Health Statistics, CDC.

A major function of public health agencies is to assess the health status of the population. The value of such assessment is enhanced when comparisons to some benchmarks, such as other similar populations or to national norms, can be made. These comparisons can be simplified (and made more efficient) if a limited set of health status indicators is monitored by jurisdictions nationwide.

A set of indicators would facilitate comparability of data on health status within and among State and local areas and would permit the valid comparison of local and State health data with national data. Further, the use of a set of indicators would facilitate communication among public health officials and with others involved in programs and activities that affect the Nation's health (e.g., employers and school administrators). To be of optimum use, the indicators should include measures needed for area-wide health planning and allocating health resources among programs, areas, or regions. The indicators should also provide measures needed to judge the results of health planning and to study changes in health over time.

States and local agencies provide much of the data required by a set of health indicators, thus, the indicators must be developed in consultation with State and local health agencies. State use of the indicators—rather than use at the Federal level or Federal dissemination of the indicators to the States—will be tracked as the measure of success in achieving this objective, since State use of the indicators is a measure of their value to the States. Broad implementation by the States would also expand the range of comparisons that could be made by each jurisdiction using the health status indicators.

22.2 Identify, and create where necessary, national data sources to measure progress toward each of the year 2000 national health objectives. (Baseline: 77 percent of the objectives have baseline data in 1990)

Type-Specific Target

		1989 Baseline	*2000 Target*
22.2a	**State level data for at least two-thirds of the objectives**	**23 States**[†]	**35 States**

[†] *Measured using the 1989 Draft Year 2000 National Health Objectives*

Baseline data sources: For national data, Office of Disease Prevention and Health Promotion; for State data, Public Health Foundation.

The process of monitoring progress toward each objective requires baseline data and additional data points collected at intervals throughout the 1990s. The chart below summarizes, by priority area, three categories of objectives classified according to the Public Health Service's ability to track progress toward their achievement. The first category is composed of objectives that have an identified baseline data source and a reliable, annual future data source. The second category includes those objectives that have no baseline data but can be readily tracked through modification of existing collection systems. Other objectives in this category are those tracked with periodic (not annual) surveys such as the National Survey of Family Growth. The third category includes objectives that are most problematic. These may have baseline data collected through an *ad hoc* survey, but future data sources must be created.

Fig. 22.2

Summary of availability of future data sources

Priority Area	Number of Objectives With: Annual Data	Periodic Data	New Source Needed
Physical Activity and Fitness	1	6	5
Nutrition	5	10	6
Tobacco	9	6	1
Alcohol and Other Drugs	5	6	8
Family Planning	0	8	3
Mental Health and Mental Disorders	1	11	2
Violent and Abusive Behavior	5	6	7
Educational and Community-Based Programs	2	6	6
Unintentional Injuries	15	3	4
Occupational Safety and Health	6	4	5
Environmental Health	5	7	4
Food and Drug Safety	3	1	2
Oral Health	1	13	2
Maternal and Infant Health	8	6	2
Heart Disease and Stroke	3	12	2
Cancer	7	7	2
Diabetes and Chronic Disabling Conditions	6	6	8
HIV Infection	4	6	4
Sexually Transmitted Diseases	10	2	3
Immunization and Infectious Diseases	14	0	5
Clinical Preventive Services	0	4	4
Surveillance and Data Systems	-	1	6
Age-Related Objectiives	5	0	0
Total	115	131	91

A comprehensive review of existing data systems should be undertaken to determine what data are currently available and what modifications or additions to systems are needed to track the objectives. New collection systems should only be proposed when it would be inefficient to modify existing systems. Because health is often relatively poor among low-income and minority populations, particular attention should be given to expanding sample size sufficiently to collect reliable data for racial and ethnic minorities, as well as people with low education and income levels. Three types of new data systems necessary to monitor progress have already been identified. A number of the Year 2000 objectives focus on health promotion at the worksite, in schools, and by primary care providers. Data systems will be needed to collect information about these settings and providers.

State data collection is an integral part of national efforts to describe the health status of the population and mount effective programs to improve the health of the nation. There is wide variation among the States in their ability to track progress toward the national health objectives. Further, data collection systems are more well developed for some issues than others. For example, in its study of State ability to collect data for the draft year 2000 national health objectives, the Public Health Foundation found that in the Maternal and Infant Health priority area, 27 States had data for at least two thirds of the draft objectives and an additional 20 States had data for at least one third. In contrast, only one State reported that it had data for at least two thirds of the draft objectives in the Nutrition priority area and only 10 had data for at least one third.[5] The States are not expected to choose each national health objective as a State priority, therefore it is unnecessary for each State to collect data on each national health objective.

22.3 Develop and disseminate among Federal, State, and local agencies procedures for collecting comparable data for each of the year 2000 national health objectives and incorporate these into Public Health Service data collection systems. (Baseline: Although such surveys as the National Health Interview Survey may serve as a model, widely accepted procedures do not exist in 1990)

Baseline data source: National Center for Health Statistics, CDC.

The Institute of Medicine's report, *The Future of Public Health*, recognized the importance of surveillance and data systems for guiding public health into the 21st century. The report specifically urges the creation and use of methods for the collection of "... national data that will permit comparison of local and State health data with those of the Nation and of other States and localities and that will facilitate progress towards the national health objectives and implementation of the [Model Standards . .].[2] This objective responds to the Institute of Medicine's recommendation by targeting the development, dissemination, and use of collection methods that improve comparability among data collected by all levels of government.

Achieving this objective entails examination of each of the national health objectives to determine and define the pieces of information needed to measure progress toward each objective. For example, such information might be the wording of standard questions for use in determining the prevalence of smoking in a given population. Once developed, the use of these methods should be encouraged in Federal, State, local, and private sector data collection systems so that greater comparability can be achieved.

It must be recognized that complete comparability across data systems is not possible. Some surveys are done by direct personal interview, others are conducted by telephone or mail; the quality of surveys (including response rates) vary considerably, and even identical questions asked in different contexts can produce different results. Efforts in this area should reduce methodological difference and thus increase the comparability and usefulness of data.

22.4 Develop and implement a national process to identify significant gaps in the Nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Baseline data source: National Center for Health Statistics, CDC.

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

The availability of baseline data was one of the major criteria for establishing the year 2000 national health objectives. Therefore, it was often difficult to give some important areas of public health concern adequate attention in this document. Insufficient data—to understand and document the full extent of problems and issues—sometimes prevented the setting of meaningful objectives. The lack of good quality, national data was especially problematic in the priority areas on *HIV Infection, Mental Health and Mental Disorders, Environmental Health, Occupational Health, and Diabetes and Chronic Disabling Conditions* as well as in the cross-cutting area of health-related quality of life. Furthermore, health problems are seldom static, but constantly change as new issues arise. If the Nation's health data are to meet the challenges of the future, a process needs to be developed to identify existing data gaps and anticipate data needs for emerging public health issues. This does not imply that current data systems were developed in a random or haphazard fashion, but rather that as health issues and data collection become more complex, it is important that a more systematic process be developed to identify and meet the data needs of the future. The process for identifying major national data gaps will require the participation of health experts from Federal, State, and local governments as well as from the academic and private sectors.

Attention to the specific needs of special populations, including racial and ethnic groups and people with disabilities, is a cornerstone of the year 2000 national health objectives. Throughout this document, objectives for the total population also target improvements for populations that have the highest disease rates, the greatest prevalence of risk factors, or who receive the fewest health services. Frequently, however, during development of the objectives, efforts to include special targets were frustrated by a lack of data. This objective is also intended to direct attention to data issues connected with special populations. Achievement of this objective will enable the Public Health Service to better address the needs of special populations throughout this decade and to be better prepared to address their specific health problems during the next decade.

Demographic variables, especially indicators of race and ethnicity, are of particular concern to the public health system. It is commonly assumed that the lack of health data for racial and ethnic subpopulations is caused by failure to request race and ethnicity on national surveys. However, most large national data bases include these identifiers (see Table 22.1 above). The primary reason for the lack of data on race and ethnicity is the sheer expense of expanding sample sizes sufficiently to make reliable estimates for smaller subgroups of the population. Even the largest of the national probability-based health surveys can rarely make estimates for American Indians or Asian Americans, let alone for smaller subgroups such as recent immigrants from Southeast Asia.

Efforts to prevent disability and to improve the quality of life for people with disabilities are hampered by the paucity of data describing the health of people with disabilities and chronic illnesses. An estimated 35 million Americans have chronic disabilities resulting from disease, accidents, and/or life style practices that affect health.[4] Accomplishment of this objective will help the public health system respond to the specific needs of people with disabilities and improve the science base for preventing disabilities.

22.5 Implement in all States periodic analysis and publication of data needed to measure progress toward objectives for at least 10 of the priority areas of the national health objectives. (Baseline: 20 States reported that they disseminate the analyses they use to assess State progress toward the health objectives to the public and to health professionals in 1989)

Type-Specific Target

	1989 Baseline	*2000 Target*
22.5a Periodic analysis and publication of State progress toward the national objectives for each racial or ethnic group that makes up at least 10 percent of the State population	—	**25 States**

Note: Periodic is at least once every 3 years. Objectives include, at a minimum, one from each objectives category: health status, risk reduction, and services and protection.

Baseline data source: Public Health Foundation.

Most programs that support achievement of the objectives are carried out at the State and local levels. Thus, real progress toward the objectives must be measured, tracked, and monitored at State and local levels as well as at the national level. At a minimum, States should be able to characterize "health" in terms of mortality, morbidity, and preventable risk exposure. Further, a complete picture of State health is possible only when major components of the population, such as minority groups, can also be accurately described.

Although the national health objectives are a blueprint for describing and improving the health of the Nation's population, they are not intended to be uniformly implemented nationwide. States will use the objectives as a model, concentrating on their own priorities. This objective targets collection, analysis, and dissemination by States in at least 10 priority areas to broaden State level coverage of disease prevention and health promotion. In particular, the objective targets an expansion of State attention to minority populations. National data indicate that racial and ethnic minorities often experience a higher prevalence of morbidity, mortality, and risk factors. State level data describing these differences are needed to help States close health status gaps between lower- and higher-income people and among racial and ethnic minorities and whites.

22.6 Expand in all States systems for the transfer of health information related to the national health objectives among Federal, State, and local agencies. (Baseline: 30 States reported that they have some capability for transfer of health data, tables, graphs, and maps to Federal, State, and local agencies that collect and analyze data in 1989)

Note: Information related to the national health objectives includes State and national level baseline data, disease prevention/health promotion evaluation results, and data generated to measure progress.

Baseline data source: Public Health Foundation.

National public health agencies compile State-supplied data and distribute national health status data to State health agencies. These data are important to States and the Federal Government for identifying trends, measuring progress toward goals, and identifying areas of concern. Similarly, State health agencies can help local health agencies and health professionals by giving them State data and analyses used to assess progress toward State health objectives. Since State health data users include such disparate groups as health professionals, city councils, and university professors, State agencies should make their public health data available in a variety of formats, for example, publications, computer tapes, diskettes, and electronic telecommunication systems, and include thorough and accurate documentation.

An efficient, computerized, technologically current data transfer network could assure the rapid availability of State data to Federal health agencies and of national data to States and State data to local users. Such a system could provide standardized tabulations and allow users the flexibility to rapidly analyze, graph, and map information to meet specific needs. Well-designed systems would accommodate multiple sources of data, including hospitalization and ambulatory-care databases, in formats that can be shared, analyzed, and compared.

22.7 Achieve timely release of national surveillance and survey data needed by health professionals and agencies to measure progress toward the national health objectives. (Baseline data available in 1993)

Note: Timely release (publication of provisional or final data or public use data tapes) should be based on the use of the data, but is at least within one year of the end of data collection.

The issue of timeliness of data is central to the larger goal of improving public health data systems. Data must be released on a timely basis to assure that appropriate public health actions are taken and their effects evaluated. The definition of "timely" varies according to intended use for the data. Data used to monitor and respond to foodborne epidemics are needed virtually hours after they are reported. At the other extreme, national data that describes secondary chronic conditions among people with disabilities may remain useful to researchers and program managers for years after initial collection. Dissemination within one year is set as the guideline for timeliness in this objective based on the assumption that most public health data needs can be met when data are available within that period, but with the recogniton that there are important exceptions.

Surveillance and Data Needs

Availability of Future Data

Periodic surveys and/or supplements to existing surveys can help track Objective 22.3.

New surveillance systems are needed to track Objectives 22.1, 22.2, 22.4, 22.5, 22.6, and 22.7

Research and Evaluation Needs

Research and evaluation improvements to monitor the national health objectives and guide public health into the 21st century include the following:

- Improved indicators of exposure to health risks, especially environmental and occupational risks.
- Methods for linking data files that are consistent with maintaining privacy and confidentiality.
- Models for establishing future health objectives and assessing progress toward them.
- Improved methodologies for making small area estimates from national data.
- Implementation of a triennial evaluation process for all national health surveillance systems.

Public health data systems should be evaluated regularly to assure that they continue to serve public health purposes and operate as efficiently as possible. Systems should be reviewed to determine their adequacy to provide data for tracking progress toward the Nation's health objectives and to identify impediments to achievement.

An implicit aim of the evaluation process should be to maximize availability and quality, as defined by explicit attributes including sensitivity, flexibility, and timeliness, such as those described in the Centers for Disease Control's *Guidelines for Evaluating Surveillance Systems*.[1] Of course, evaluation is not sufficient; recommendations for improvements should be implemented to maintain systems that are efficient and responsive to current and future needs for information.

Baseline Data Source References

National Center for Health Statistics, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Hyattsville, MD.

Office of Disease Prevention and Health Promotion, Public Health Service, U.S. Department of Health and Human Services, Washington, DC.

Public Health Foundation, Washington, DC.

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[2] The Institute of Medicine, National Academy of Sciences. *The Future of Public Health.* Washington, DC: National Academy Press, 1988.

[3] National Center for Health Statistics. *Health, United States, 1988.* Hyattsville, MD: U.S. Department of Health and Human Services, 1989.

[4] Nova Research Company. *Analysis of the 1990 Health Objectives for the Nation for Applicability to Prevention of Disabilities.* Bethesda, MD: the Company, 1988.

[5] Public Health Foundation. *Promoting Health/Preventing Disease: Year 2000 Objectives for the Nation A Report on States' Ability to Measure Progress Toward Achievement of the Year 2000 Objectives.* Washington, DC: the Foundation, 1990.

Age-Related Objectives

Contents

- Children
- Adolescents and Young Adults
- Adults
- Older Adults

Children

Introduction

Childhood is a critical time for healthy human development. Not only are children dependent on other individuals for their food, clothing and protection, but they are influenced by the behavioral patterns that they witness. The vulnerability of children places them at special risk for preventable problems including unintentional injuries, homicide, child abuse and neglect, and lead poisoning. They are also at risk for developmental problems, which can affect them throughout their lives.

The health profile of American children has significantly changed during this century. As a result of widespread immunization, the threats of infectious diseases such as polio, diphtheria, scarlet fever, pneumonia, measles, and whooping cough, have nearly disappeared during the past 40 years. Since 1977, the rate of childhood deaths has declined and progress has even surpassed the 1990 goal set in *Healthy People* in 1979.

Replacing infectious diseases are injury-related morbidity and mortality, currently the leading cause of death in childhood. Almost half of all childhood deaths are caused by unintentional injuries, and about half of these injuries are due to motor vehicle accidents. Unintentional injuries are preventable, and the rates of childhood deaths in motor vehicle crashes have decreased substantially as a result of prevention strategies of the last decade. These include an increased use of child safety seats, safer automobile design, and reduced speed limits.

Although progress has been made in reducing overall death rates due to improved protection for children, child homicide has not improved. Low socioeconomic status and high-risk environments are correlated with child homicide, as are many of the major causes of child disability, e.g., lead poisoning, learning disorders, mental retardation, vision and speech impairments, and emotional and behavioral problems.

Challenges to the health of American children involve a wide range of social and economic factors. Preventable deaths and disability can be reduced through measures including, but not limited to, appropriate education, support programs for parents, and improved access to health services. Primary health care providers, health educators, housing officials, community group members, social service professionals, and concerned individuals can all make a difference in the health of our children.

Presented below are the key year 2000 national health objectives targeting improvements in the health of children. The objectives are presented in numeric order, by type of objective (e.g., health status, risk reducation, and services and protection). Readers should also see *Maternal and Infant Health* for objectives related to infants and pregnancy. The opportunities presented by these objectives can be summarized, in part, by a target for reducing deaths among infants and children:

> Reduce the death rate for children by 15 percent to no more than 28 per 100,000 children aged 1 through 14, and for infants by approximately 30 percent to no more than 7 per 1,000 live births. (Baseline: 33 per 100,000 for children in 1987 and 10.1 per 1,000 live births for infants in 1987)

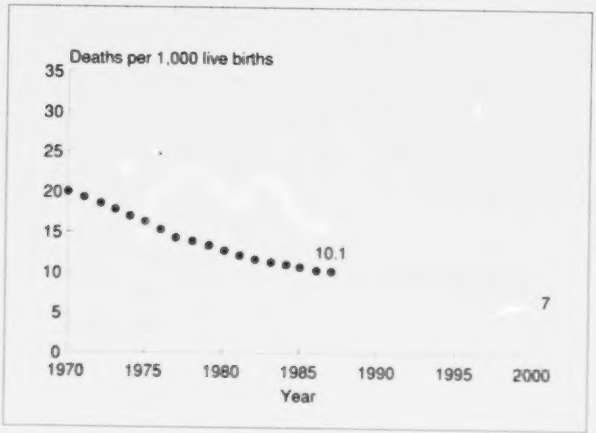

Fig. A

Infant mortality rate

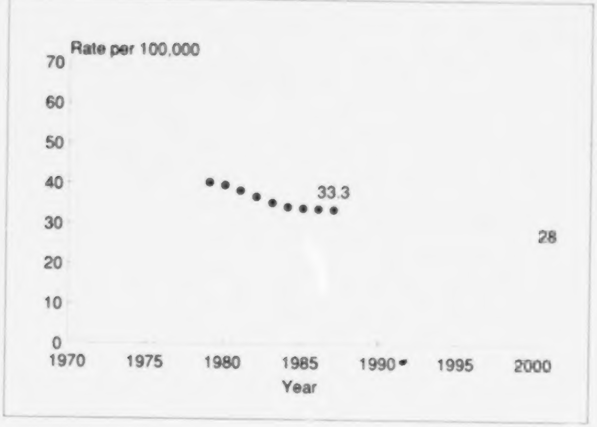

Fig. B

Death rate among children aged 1 through 14

Key Health Status Objectives Targeting Children

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent. (Baseline: Up to 16 percent among low-income children in 1988, depending on age and race/ethnicity)

Special Population Targets

	Prevalence of Short Stature	*1988 Baseline*	*2000 Target*
2.4a	Low-income black children <age 1	15%	10%
2.4b	Low-income Hispanic children <age 1	13%	10%
2.4c	Low-income Hispanic children aged 1	16%	10%
2.4d	Low-income Asian/Pacific Islander children aged 1	14%	10%
2.4e	Low-income Asian/Pacific Islander children aged 2-4	16%	10%

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

6.3 Reduce to less than 10 percent the prevalence of mental disorders among children and adolescents. (Baseline: An estimated 12 percent among youth younger than age 18 in 1989)

7.1a Reduce homicides among children aged 3 and younger to no more than 3.1 per 100,000. (Age-adjusted baseline: 3.9 per 100,000 in 1987)

7.4 Reverse to less than 25.2 per 1,000 children the rising incidence of maltreatment of children younger than age 18. (Baseline: 25.2 per 1,000 in 1986)

Type-Specific Targets

	Incidence of Types of Maltreatment (per 1,000)	*1986 Baseline*	*2000 Target*
7.4a	Physical abuse	5.7	<5.7
7.4b	Sexual abuse	2.5	<2.5
7.4c	Emotional abuse	3.4	<3.4
7.4d	Neglect	15.9	<15.9

9.3a Reduce deaths among children aged 14 and younger caused by motor vehicle crashes to no more than 5.5 per 100,000. (Baseline: 6.2 per 100,000 in 1987)

9.5a Reduce drowning deaths among children aged 4 and younger to no more than 2.3 per 100,000. (Age adjusted baseline: 4.2 per 100,000 in 1987)

9.6a Reduce residential fire deaths among children aged 4 and younger to no more than 3.3 per 100,000. (Age-adjusted baseline: 4.4 per 100,000 in 1987)

9.8a Reduce nonfatal poisoning among children aged 4 and younger to no more than 520 emergency department treatments per 100,000. (Baseline: 650 per 100,000 in 1986)

11.1b Reduce asthma morbidity among children aged 14 and younger, as measured by a reduction in asthma hospitalizations to no more than 225 per 100,000. (Baseline: 284 per 100,000 in 1987)

11.4 Reduce the prevalence of blood lead levels exceeding 15 µg/dL and 25 µg/dL among children aged 6 months through 5 years to no more than 500,000 and zero, respectively. (Baseline: An estimated 3 million children had levels exceeding 15 µg/dL, and 234,000 had levels exceeding 25 µg/dL, in 1984)

Special Population Target

	Prevalence of Blood Lead Levels Exceeding 15 µg/dL & 25 µg/dL	*1984 Baseline*	*2000 Target*
11.4a	Inner-city low-income black children (annual family income <$6,000 in 1984 dollars)	234,900 & 36,700	75,000 & 0

13.1 Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 60 percent among adolescents aged 15. (Baseline: 53 percent of children aged 6 through 8 in 1986-87; 78 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Dental Caries Prevalence	*1986-87 Baseline*	*2000 Target*
13.1a	Children aged 6-8 whose parents have less than high school education	70%	45%
13.1b	American Indian/Alaska Native children aged 6-8	92%† 52%‡	45%
13.1c	Black children aged 6-8	61%	40%
13.1d	American Indian/Alaska Native adolescents aged 15	93%‡	70%

†In primary teeth in 1983-84 ‡In permanent teeth in 1983-84

13.2 Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6 through 8 and no more than 15 percent among adolescents aged 15. (Baseline: 27 percent of children aged 6-8 in 1986; 23 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Untreated Dental Caries Among Children	*1986-87 Baseline*	*2000 Target*
13.2a	Children aged 6-8 whose parents have less than high school education	43%	30%
13.2b	American Indian/Alaska Native children aged 6-8	64%†	35%
13.2c	Black children aged 6-8	38%	25%
13.2d	Hispanic children aged 6-8	36%‡	25%

†1983-84 baseline ‡1982-84 baseline

14.1 Reduce the infant mortality rate to no more than 7 per 1,000 live births. (Baseline: 10.1 per 1,000 live births in 1987)

Special Population Targets

	Infant Mortality per 1,000 Live Births	*1987 Baseline*	*2000 Target*
14.1a	Blacks	17.9	11
14.1b	American Indians/Alaska Natives	12.5†	8.5
14.1c	Puerto Ricans	12.9†	8

Type Specific Targets

	Neonatal and Postneonatal Mortality per 1,000 Live Births	*1987 Baseline*	*2000 Target*
14.1d	Neonatal mortality	6.5	4.5
14.1e	Neonatal mortality among blacks	11.7	7
14.1f	Neonatal mortality among Puerto Ricans	8.6†	5.2
14.1g	Postneonatal mortality	3.6	2.5
14.1h	Postneonatal mortality among blacks	6.1	4
14.1i	Postneonatal mortality among American Indians/ Alaska Natives	6.5†	4
14.1j	Postneonatal mortality among Puerto Ricans	4.3†	2.8

†1984 baseline

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

17.8* Reduce the prevalence of serious mental retardation in school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

Note: Serious mental retardation is defined as an Intelligence Quotient (I.Q.) less than 50. This includes individuals defined by the American Association of Mental Retardation as profoundly retarded (I.Q. of 20 or less), severely retarded (I.Q. of 21-35), and moderately retarded (I.Q. of 36-50).

20.3d* Reduce Hepatitis B (HBV) among children of Asians/Pacific Islanders to an incidence of no more than 1,800 cases. (Baseline: An estimated 8,900 cases in 1987)

20.8 Reduce infectious diarrhea by at least 25 percent among children in licensed child care centers and children in programs that provide an Individualized Education Program (IEP) or Individualized Health Plan (IHP). (Baseline data available in 1992)

20.9 Reduce acute middle ear infections among children aged 4 and younger, as measured by days of restricted activity or school absenteeism, to no more than 105 days per 100 children. (Baseline: 131 days per 100 children in 1987)

20.10 Reduce pneumonia-related days of restricted activity as follows:

	1987 Baseline	*2000 Target*
Children aged 4 and younger (per 100 children)	27 days	24 days

Key Risk Reduction Objectives Targeting Children

1.3* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

1.4 Increase to at least 20 percent the proportion of people aged 18 and older and to at least 75 percent the proportion of children and adolescents aged 6 through 17 who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 12 percent for people aged 18 and older in 1985; 66 percent for youth aged 10 through 17 in 1984)

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

1.5 Reduce to no more than 15 percent the proportion of people aged 6 and older who engage in no leisure-time physical activity. (Baseline: 24 percent for people aged 18 and older in 1985)

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

1.6 Increase to at least 40 percent the proportion of people aged 6 and older who regularly perform physical activities that enhance and maintain muscular strength, muscular endurance, and flexibility. (Baseline data available in 1991)

2.10 Reduce iron deficiency to less than 3 percent among children aged 1 through 4 and among women of childbearing age. (Baseline: 9 percent for children aged 1 through 2, 4 percent for children aged 3 through 4, and 5 percent for women aged 20 through 44 in 1976-80)

Special Population Targets

	Iron Deficiency Prevalence	*1976-80 Baseline*	*2000 Target*
2.10a	Low-income children aged 1-2	21%	10%
2.10b	Low-income children aged 3-4	10%	5%

	Anemia Prevalence	*1983-85 Baseline*	*2000 Target*
2.10d	Alaska Native children aged 1-5	22-28%	10%

Note: Iron deficiency is defined as having abnormal results for two or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15 percent have become regular cigarette smokers by age 20. (Baseline: 30 percent of youth had become regular cigarette smokers by ages 20 through 24 in 1987)

Special Population Target

	Initiation of Smoking	*1987 Baseline*	*2000 Target*
3.5a	Lower socioeconomic status youth[†]	40%	18%

[†] *As measured by people aged 20-24 with a high school education or less*

3.8 Reduce to no more than 20 percent the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home. (Baseline: More than 39 percent in 1986, as 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household)

Note: Regular exposure to tobacco smoke at home is defined as the occurrence of tobacco smoking anywhere in the home on more than three days each week.

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

9.12a Increase use of occupant protection systems, such as safety belts, inflatable safety restraints, and child safety seats, to at least 95 percent of children aged 4 and younger who are motor vehicle occupants. (Baseline: 84 percent in 1988)

11.6 Increase to at least 40 percent the proportion of homes in which homeowners/occupants have tested for radon concentrations and that have either been found to pose minimal risk or have been modified to reduce risk to health. (Baseline: Less than 5 percent of homes had been tested in 1989)

Special Population Target

	Testing and Modification As Necessary	*Baseline*	*2000 Target*
11.6b	Homes with children	—	50%

13.8 Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children aged 8 and 8 percent of adolescents aged 14 in 1986-87)

Note: Progress toward this objective will be monitored based on prevalence of sealants in children at age 8 and at age 14, when the majority of first and second molars, respectively, are erupted.

20.11 Increase immunization levels as follows:

Basic immunization series among children under age 2: at least 90 percent. (Baseline: 70-80 percent estimated in 1989)

Basic immunization series among children in licensed child care facilities and kindergarten through post-secondary education institutions: at least 95 percent. (Baseline: For licensed child care, 94 percent; 97 percent for children entering school for the 1987-1988 school year; and for post-secondary institutions, baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among noninstitutionalized, high-risk populations, as defined by the Immunization Practices Advisory Committee: at least 60 percent. (Baseline: 10 percent estimated for pneumococcal vaccine and 20 percent for influenza vaccine in 1985)

Hepatitis B immunization among high-risk populations, including infants of surface antigen-positive mothers to at least 90 percent. (Baseline data available in 1992)

21.2a Increase to at least 90 percent the proportion of infants up to 24 months who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

21.2b Increase to at least 80 percent the proportion of children aged 2 through 12 who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Key Service and Protection Objectives Targeting Children

1.8 Increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education. (Baseline: 36 percent in 1984-86)

1.9 Increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities. (Baseline: Students spent an estimated 27 percent of class time being physically active in 1983)

Note: Lifetime activities are activities that may be readily carried into adulthood because they generally need only one or two people. Examples include swimming, bicycling, jogging, and racquet sports. Also counted as lifetime activities are vigorous social activities such as dancing. Competitive group sports and activities typically played only by young children such as group games are excluded.

5.8 Increase to at least 85 percent the proportion of people aged 10 through 18 who have discussed human sexuality, including values surrounding sexuality, with their parents and/or have received information through another parentally-endorsed source, such as youth, school, or religious programs. (Baseline: 66 percent of people aged 13 through 18 had discussed sexuality with their parents; reported in 1986)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

6.14 Increase to at least 75 percent the proportion of providers of primary care for children who include assessment of cognitive, emotional, and parent-child functioning, with appropriate counseling, referral, and followup, in their clinical practices. (Baseline data available in 1992)

7.13 Extend to at least 45 States implementation of unexplained child death review systems. (Baseline data available in 1991)

7.14 Increase to at least 30 the number of States in which at least 50 percent of children identified as neglected or physically or sexually abused receive physical and mental evaluation with appropriate followup as a means of breaking the intergenerational cycle of abuse. (Baseline data available in 1993)

7.15 Reduce to less than 10 percent the proportion of battered women and their children turned away from emergency housing due to lack of space. (Baseline: 40 percent in 1987)

8.9 Increase to at least 75 percent the proportion of people aged 10 and older who have discussed issues related to nutrition, physical activity, sexual behavior, tobacco, alcohol, other drugs, or safety with family members on at least one occasion during the preceding month. (Baseline data available in 1991)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

9.15 Enact in 50 States laws requiring that new handguns be designed to minimize the likelihood of discharge by children. (Baseline: 0 States in 1989)

13.12 Increase to at least 90 percent the proportion of all children entering school programs for the first time who have received an oral health screening, referral, and followup for necessary diagnostic, preventive, and treatment services. (Baseline: 66 percent of children aged 5 visited a dentist during the previous year in 1986)

Note: School programs include Head Start, prekindergarten, kindergarten, and first grade.

14.11 Increase to at least 90 percent the proportion of all pregnant women who receive prenatal care in the first trimester of pregnancy. (Baseline: 76 percent of live births in 1987)

Special Population Targets

	Proportion of Pregnant Women Receiving Early Prenatal Care	*1987 Baseline*	*2000 Target*
14.11a	Black women	61.1†	90†
14.11b	American Indian/Alaska Native women	60.2†	90†
14.11c	Hispanic women	61.0†	90†

†*Percent of live births*

14.16 Increase to at least 90 percent the proportion of babies aged 18 months and younger who receive recommended primary care services at the appropriate intervals. (Baseline data available in 1992)

17.15 Increase to at least 80 percent the proportion of providers of primary care for children who routinely refer or screen infants and children for impairments of vision, hearing, speech and language, and assess other developmental milestones as part of well-child care. (Baseline data available in 1992)

17.16 Reduce the average age at which children with significant hearing impairment are identified to no more than 12 months. (Baseline: Estimated as 24 to 30 months in 1988)

17.20 Increase to 50 the number of States that have service systems for children with or at risk of chronic and disabling conditions, as required by Public Law 101-239. (Baseline data available in 1991)

Note: Children with or at risk of chronic and disabling conditions, often referred to as children with special health care needs, include children with psychosocial as well as physical problems. This population encompasses children with a wide variety of actual or potential disabling conditions, including children with or at risk for cerebral palsy, mental retardation, sensory deprivation, developmental disabilities, spina bifida, hemophilia, other genetic disorders, and health related educational and behavioral problems. Service systems for such children are organized networks of comprehensive, community-based, coordinated, and family-centered services.

21.4 Improve financing and delivery of clinical preventive services so that virtually no American has a financial barrier to receiving, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.7 Weight loss practices

Nutrition

2.3 Overweight
2.17 Nutritious school and child care food services
2.19 Nutrition education in schools
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.10 Tobacco-use prevention education and tobacco-free schools
3.12 Clean indoor air laws
3.13 Tobacco product sale and distribution to youth
3.14 State plans to reduce tobacco use
3.15 Tobacco product advertising and promotion to youth
3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.13 Alcohol and drug education in schools
4.16 Policies to reduce minors' access to alcohol
4.17 Restrictions on promotion of alcohol to youth

Violent and Abusive Behavior

7.12 Emergency room protocols
7.16 Conflict resolution education in schools

Educational and Community-Based Programs

8.4 Quality school health education
8.10 Community health promotion programs

Unintentional Injury

9.4 Fall-related deaths
9.13 Helmet use by motorcyclists and bicyclists
9.18 Injury prevention instruction in schools
9.19 Protective equipment in sporting and recreation events
9.21 Injury prevention counseling by clinicians
9.22 Emergency medical services and trauma systems

Cancer

16.9 Actions to reduce sun exposure

Diabetes and Chronic Disabling Conditions

17.6 Hearing impairment
17.7 Vision impairment
17.10 Diabetes-related complications

HIV Infection

18.10 HIV education in schools
18.13 Clinic services for HIV and other sexually transmitted diseases

Sexually Transmitted Diseases

19.12 Sexually transmitted disease education in schools

Immunization and Infectious Diseases

20.1 Vaccine-preventable diseases
20.15 Financial barriers to immunization

Clinical Preventive Services

21.3 Access to primary care
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

Note: Readers should also see Maternal and Infant Health for additional objectives related to infants.

Adolescents and Young Adults

Introduction

Adolescents and young adults classify an extremely diverse group of people aged 15 to 24. It is a time of rapid physical and emotional change; a period of learning and experimentation. Attitudes and behaviors that are developed in adolescence related to diet, exercise, sexual practices, safety habits, tobacco and alcohol use, may have health consequences that continue through adulthood.

From 1977 to 1987, the death rate among people aged 15 through 24 declined by 14 percent. The leading causes of death among adolescents and young adults include injuries, homicide, suicide, cancer, and heart disease. Deaths due to cancer and heart disease have declined dramatically among adolescents since the 1950s, and although they are still among the leading causes of death in this age group, they are overshadowed by deaths caused by unintentional injuries, homicide, and suicide.

The major preventable health concerns of adolescents and young adults fall into two categories: injuries and violence that kill or disable many young people, and developing lifestyle behaviors.

Three-quarters of injury deaths among people aged 15 through 24 are due to automobile accidents, and half of all motor vehicle accidents involve alcohol. Homicide is the second leading cause of death, but for blacks, it is the number one cause of death. Over half of all homicide victims are related to or acquainted with their killers, and most are killed with firearms. Approximately 60 percent of all suicides are also committed with firearms.

The use of tobacco, alcohol, and illicit drugs by adolescents and young adults has been declining and awareness of their dangers has grown among high school seniors. However, among those aged 18 through 24, drinking is more prevalent than in any other age group.

Sexual activity among teenagers poses special risks including unwanted pregnancy and sexually transmitted diseases, including HIV infection. Unintended pregnancies among teenagers can adversely affect the well-being of teenage girls and their babies. Rates of sexually transmitted diseases, such as gonorrhea and syphilis, are highest among people aged 15 through 29.

Clearly, special social supports are needed to foster informed and positive health-related choices by young people. Presented below are the key year 2000 national health objectives targeting improvements in the health of adolescents and young adults. The objectives are presented in numeric order, by type of objective (e.g., health status, risk reducation, and services and protection). The opportunities presented by these objectives can be summarized, in part, by a target for reducing deaths among adolescents and young adults:

Reduce the death rate for adolescents and young adults by 15 percent to no more than 85 per 100,000 people aged 15 through 24. (Baseline: 99.4 per 100,000 in 1987)

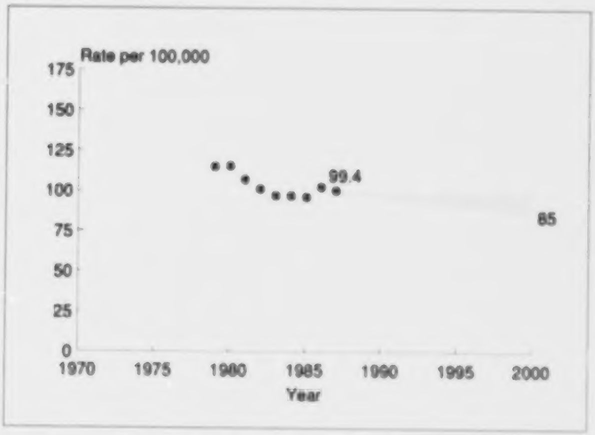

Fig. C

Death rate among adolescents and young adults aged 15 through 24

Key Health Status Objectives Targeting Adolescents and Young Adults

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

2.3* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

4.1b Reduce deaths among people aged 15 through 24 caused by alcohol-related motor vehicle crashes to no more than 18 per 100,000. (Baseline: 21.5 per 100,000 in 1987)

5.1 Reduce pregnancies among girls aged 17 and younger to no more than 50 per 1,000 adolescents. (Baseline: 71.1 pregnancies per 1,000 girls aged 15 through 17 in 1985)

Special Population Targets

	Pregnancies (per 1,000)	*1985 Baseline*	*2000 Target*
5.1a	Black adolescent girls aged 15-19	186[†]	120
5.1b	Hispanic adolescent girls aged 15-19	158	105

[†] *Nonwhite adolescents*

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

6.1a* Reduce suicides among youth aged 15 through 19 to no more than 8.2 per 100,000. (Baseline: 10.3 per 100,000 in 1987)

6.1b* Reduce suicides among men aged 20 through 34 to no more than 21.4 per 100,000. (Baseline: 25.2 per 100,000 in 1987)

6.2* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

6.3 Reduce to less than 10 percent the prevalence of mental disorders among children and adolescents. (Baseline: An estimated 12 percent among youth younger than age 18 in 1989)

7.1 Reduce homicides to no more than 7.2 per 100,000 people. (Age-adjusted baseline: 8.5 per 100,000 in 1987)

Special Population Targets

	Homicide Rate (per 100,000)	*1987 Baseline*	*2000 Target*
7.1b	Spouses aged 15-34	1.7	1.4
7.1c	Black men aged 15-34	90.5	72.4
7.1d	Hispanic men aged 15-34	53.1	42.5
7.1e	Black women aged 15-34	20.0	16.0
7.1f	American Indians/Alaska Natives in Reservation States	14.1	11.3

7.7a Reduce rape and attempted rape of women aged 12 through 34 to no more than 225 per 100,000. (Baseline: 250 per 100,000 in 1986)

9.3b Reduce deaths among youth aged 15 through 24 caused by motor vehicle crashes to no more than 33 per 100,000. (Baseline: 36.9 per 100,000 in 1987)

13.1 Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 60 percent among adolescents aged 15. (Baseline: 53 percent of children aged 6 through 8 in 1986-87; 78 percent of adolescents aged 15 in 1986-87)

Special Population Target

	Dental Caries Prevalence	*1983-84 Baseline*	*2000 Target*
13.1d	American Indian/Alaska Native adolescents aged 15	93%	70%

13.2 Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6 through 8 and no more than 15 percent among adolescents aged 15. (Baseline: 27 percent of children aged 6-8 in 1986; 23 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Untreated Dental Caries Among Adolescents	*1986-87 Baseline*	*2000 Target*
13.2a	Adolescents aged 15 whose parents have less than high school education	41%	25%
13.2b	American Indian/Alaska Native adolescents aged 15	84%†	40%
13.2c	Black adolescents aged 15	38%	20%
13.2d	Hispanic adolescents aged 15	31-47%‡	25%

†1983-84 baseline ‡1982-84 baseline

19.1b Reduce gonorrhea among adolescents aged 15 through 19 to an incidence of no more than 750 cases per 100,000. (Baseline: 1,123 per 100,000 in 1989)

Key Risk Reduction Objectives Targeting Adolescents and Young Adults

1.3* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

1.4 Increase to at least 20 percent the proportion of people aged 18 and older and to at least 75 percent the proportion of children and adolescents aged 6 through 17 who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 12 percent for people aged 18 and older in 1985; 66 percent for youth aged 10 through 17 in 1984)

Special Population Target

	Vigorous Physical Activity	*1985 Baseline*	*2000 Target*
1.4a	Lower-income people aged 18 and older (annual family income <$20,000)	7%	12%

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

2.8 Increase calcium intake so at least 50 percent of youth aged 12 through 24 and 50 percent of pregnant and lactating women consume three or more servings daily of foods rich in calcium, and at least 50 percent of people aged 25 and older consume two or more servings daily. (Baseline: 7 percent of women and 14 percent of men aged 19 though 24 and 24 percent of pregnant and lactating women consumed three or more servings, and 15 percent of women and 23 percent of men aged 25 through 50 consumed two or more servings in 1985-86)

Note: The number of servings of foods rich in calcium is based on milk and milk products. A serving is considered to be 1 cup of skim milk or its equivalent in calcium (302 mg). The number of servings in this objective will generally provide approximately three-fourths of the 1989 Recommended Dietary Allowance (RDA) of calcium. The RDA is 1200 mg for people aged 12 through 24, 800 mg for people aged 25 and older, and 1200 mg for pregnant and lactating women.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15 percent have become regular cigarette smokers by age 20. (Baseline: 30 percent of youth had become regular cigarette smokers by ages 20 through 24 in 1987)

Special Population Target

	Initiation of Smoking	*1987 Baseline*	*2000 Target*
3.5a	Lower socioeconomic status youth†	40%	18%

†As measured by people aged 20-24 with a high school education or less

3.9 Reduce smokeless tobacco use by males aged 12 through 24 to a prevalence of no more than 4 percent. (Baseline: 6.6 percent among males aged 12 through 17 in 1988; 8.9 percent among males aged 18 through 24 in 1987)

Special Population Target

	Smokeless Tobacco Use	*1986-87 Baseline*	*2000 Target*
3.9a	American Indian/Alaska Native youth	18-64%	10%

Note: For males aged 12 through 17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18 through 24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

4.5 Increase by at least 1 year the average age of first use of cigarettes, alcohol, and marijuana by adolescents aged 12 through 17. (Baseline: Age 11.6 for cigarettes, age 13.1 for alcohol, and age 13.4 for marijuana in 1988)

4.6 Reduce the proportion of young people who have used alcohol, marijuana, and cocaine in the past month, as follows:

Substance/Age	*1988 Baseline*	*2000 Target*
Alcohol/aged 12-17	25.2%	12.6%
Alcohol/aged 18-20	57.9%	29%
Marijuana/aged 12-17	6.4%	3.2%
Marijuana/aged 18-25	15.5%	7.8%
Cocaine/aged 12-17	1.1%	0.6%
Cocaine/aged 18-25	4.5%	2.3%

Note: The targets of this objective are consistent with the goals established by the Office of National Drug Control Policy, Executive Office of the President.

4.7 Reduce the proportion of high school seniors and college students engaging in recent occasions of heavy drinking of alcoholic beverages to no more than 28 percent of high school seniors and 32 percent of college students. (Baseline: 33 percent of high school seniors and 41.7 percent of college students in 1989)

Note: Recent heavy drinking is defined as having 5 or more drinks on one occasion in the previous 2-week period as monitored by self-reports.

4.9 Increase the proportion of high school seniors who perceive social disapproval associated with the heavy use of alcohol, occasional use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	56.4%	70%
Occasional use of marijuana	71.1%	85%
Trying cocaine once or twice	88.9%	95%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.10 Increase the proportion of high school seniors who associate risk of physical or psychological harm with the heavy use of alcohol, regular use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	44%	70%
Regular use of marijuana	77.5%	90%
Trying cocaine once or twice	54.9%	80%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.11 Reduce to no more than 3 percent the proportion of male high school seniors who use anabolic steroids. (Baseline: 4.7 percent in 1989)

5.4* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

5.5 Increase to at least 40 percent the proportion of ever sexually active adolescents aged 17 and younger who have abstained from sexual activity for the previous three months. (Baseline: 26 percent of sexually active girls aged 15 through 17 in 1988)

5.6 Increase to at least 90 percent the proportion of sexually active, unmarried people aged 19 and younger who use contraception, especially combined method contraception that both effectively prevents pregnancy and provides barrier protection against disease. (Baseline: 78 percent at most recent intercourse and 63 percent at first intercourse; 2 percent used oral contraceptives and the condom at most recent intercourse; among young women aged 15 through 19 reporting in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

7.9 Reduce by 20 percent the incidence of physical fighting among adolescents aged 14 through 17. (Baseline data available in 1991)

7.10 Reduce by 20 percent the incidence of weapon-carrying by adolescents aged 14 through 17. (Baseline data available in 1991)

8.2 Increase the high school graduation rate to at least 90 percent, thereby reducing risks for multiple problem behaviors and poor mental and physical health. (Baseline: 79 percent of people aged 20 through 21 had graduated from high school with a regular diploma in 1989)

Note: This objective and its target are consistent with the National Education Goal to increase high school graduation rates. The baseline estimate is a proxy. When a measure is chosen to monitor the National Education Goal, the same measure and data source will be used to track this objective.

13.8 Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children aged 8 and 8 percent of adolescents aged 14 in 1986-87)

Note: Progress toward this objective will be monitored based on prevalence of sealants in children at age 8 and at age 14, when the majority of first and second molars, respectively, are erupted.

18.4a* Increase to at least 60 percent the proportion of sexually active, unmarried young women aged 15 through 19 whose partners used a condom at last sexual intercourse. (Baseline: 26 percent in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

18.4b* Increase to at least 75 percent the proportion of sexually active, unmarried young men aged 15 through 19 who used a condom at last sexual intercourse. (Baseline: 57 percent in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

21.2c Increase to at least 50 percent the proportion of adolescents aged 13 through 18 who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Key Services and Protection Objectives Targeting Adolescents and Young Adults

1.8 Increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education. (Baseline: 36 percent in 1984-86)

1.9 Increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities. (Baseline: Students spent an estimated 27 percent of class time being physically active in 1983)

Note: Lifetime activities are activities that may be readily carried into adulthood because they generally need only one or two people. Examples include swimming, bicycling, jogging, and racquet sports. Also counted as lifetime activities are vigorous social activities such as dancing. Competitive group sports and activities typically played only by young children such as group games are excluded.

5.8 Increase to at least 85 percent the proportion of people aged 10 through 18 who have discussed human sexuality, including values surrounding sexuality, with their parents and/or have received information through another parentally-endorsed source, such as youth, school, or religious programs. (Baseline: 66 percent of people aged 13 through 18 have discussed sexuality with their parents; reported in 1986)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

5.10* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

8.9 Increase to at least 75 percent the proportion of people aged 10 and older who have discussed issues related to nutrition, physical activity, sexual behavior, tobacco, alcohol, other drugs, or safety with family members on at least one occasion during the preceding month. (Baseline data available in 1991)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

Related Objectives From Other Priority Areas

Physical Activity and Fitness

1.5 Sedentary lifestyle
1.6 Muscular strength, endurance, and flexibility
1.7 Weight loss practices

Nutrition

2.17 Nutritious school and child care food services
2.19 Nutrition education in schools
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco

3.10 Tobacco use prevention education and tobacco-free schools
3.12 Clean indoor air laws
3.13 Tobacco product sale and distribution to youth
3.14 State plans to reduce tobacco use
3.15 Tobacco product advertising and promotion to youth
3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs

4.8 Alcohol consumption
4.13 Alcohol and drug education in schools
4.16 Policies to reduce minors'access to alcohol
4.17 Restrictions on promotion of alcohol to youth
4.18 Alcohol concentration tolerance levels

Mental Health and Mental Disorders

6.13 Clinician review of patients' mental functioning

Violent and Abusive Behavior

7.4 Child abuse and neglect
7.12 Emergency room protocols
7.16 Conflict resolution education in schools

Educational and Community-Based Programs

8.4 Quality school health education
8.10 Community health promotion programs

Unintentional Injury

9.11 Secondary disabilities associated with head and spinal cord injuries
9.12 Motor vehicle occupant protection systems
9.13 Helmet use by motorcyclists and bicyclists
9.18 Injury prevention instruction in schools
9.19 Protective equipment in sporting and recreation events
9.21 Injury prevention counseling by clinicians
9.22 Emergency medical services and trauma systems

Cancer

16.9 Actions to reduce sun exposure

Diabetes and Chronic Disabling Conditions

17.6 Hearing impairment
17.7 Vision impairment
17.15 Clinician assessment of child development
17.20 Service systems for children with or at risk of chronic and disabling conditions

HIV Infection

18.10 HIV education in schools
18.11 HIV education in colleges and universities
18.13 Clinic services for HIV and other sexually transmitted diseases

Sexually Transmitted Diseases

19.12 Sexually transmitted disease education in schools

Immunization and Infectious Diseases

20.14 Counseling about immunization by clinician
20.15 Financial barriers to immunization

Clinical Preventive Services

21.3 Access to primary care
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

Adults

Introduction

The health profile of American adults is substantially determined by behavioral risk factors. Therefore, adults have a unique opportunity to take personal action to substantially decrease their risks for certain killers, such as cancer, heart disease, and stroke. Positive behavioral changes of the last few decades have been followed by reduced rates of related causes of death. The leading causes of death for adults aged 25 through 64 are cancer, heart disease, stroke, injuries, chronic lung disease, and liver disease. All have been associated with risk factors related to lifestyle.

Cancer has become the leading cause of death in adults, as deaths from heart disease have declined. It is estimated that 30 percent of all cancers are associated with smoking, and that 35 percent may be linked to poor eating habits. Overall, cancer mortality rates have not changed much since 1950, although some changes have occurred in rates of certain cancers. Some of the most prevalent forms of cancer can either be prevented or diagnosed early enough to prevent their spread.

Although heart disease has declined over the past decade, it is still the number two cause of death for people aged 25 through 64. Much of the recent decline in coronary heart disease can be attributed to changes in lifestyle. In fact, controlling high blood pressure, reducing dietary fat, and quitting smoking can greatly reduce the risk of heart disease and stroke.

Combining exercise and a balanced low-fat diet can contribute to weight loss, and the control of three important risk factors for heart disease—high fat intake, overweight, and a sedentary lifestyle. Eliminating tobacco and drug abuse and reducing the use of alcohol can also benefit the health of adults. Finally, seat belt use can reduce the rate of deaths caused by automobile accidents.

To promote health and prevent disease, many adults would benefit from a modification of lifestyle behaviors. Because behavior changes can be very difficult to make, supportive social environments can be very important. An expanded network of education, community, employer, and government support is key to facilitating healthy lifestyle changes. Many employers provide worksite health programs of smoking cessation, exercise, and stress control. Community groups and churches provide support and self-help groups and health facilities provide screening and patient eduction. Each is an example of the national commitment to health promotion and disease prevention.

Presented below are the key year 2000 national health objectives targeting improvements in the health of adults. The objectives are presented in numeric order, by type of objective (e.g., health status, risk reducation, and services and protection). The opportunities presented by these objectives can be summarized, in part, by a target for reducing deaths among adults:

Reduce the death rate for adults by 20 percent to no more than 340 per 100,000 people aged 25 through 64. (Baseline: 423 per 100,000 in 1987)

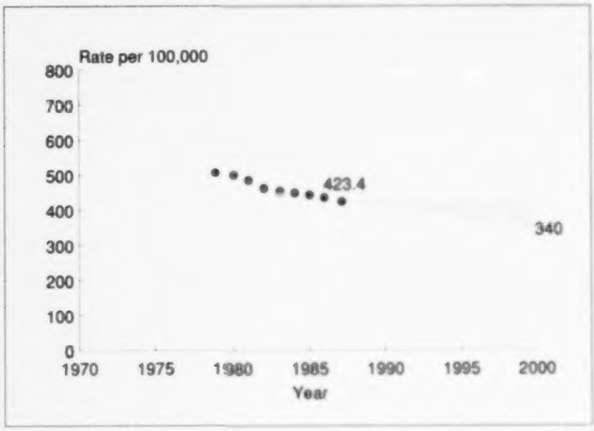

Fig. D

Death rate among adults aged 25 through 64

Key Health Status Objectives Targeting Adults

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

1.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
1.1a	Blacks	163	115

3.2* Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

5.2 Reduce to no more than 30 percent the proportion of all pregnancies that are unintended. (Baseline: 56 percent of pregnancies in the previous five years were unintended, either unwanted or earlier than desired, in 1988)

Special Population Target

	Unintended Pregnancies	*1988 Baseline*	*2000 Target*
5.2a	Black women	78%	40%

6.4 Reduce the prevalence of mental disorders (exclusive of substance abuse) among adults living in the community to less than 10.7 percent. (Baseline: One-month point prevalence of 12.6 percent in 1984)

7.1 Reduce homicides to no more than 7.2 per 100,000 people. (Age-adjusted baseline: 8.5 per 100,000 in 1987)

Special Population Targets

	Homicide Rate (per 100,000)	*1987 Baseline*	*2000 Target*
7.1b	Spouses aged 15-34	1.7	1.4
7.1c	Black men aged 15-34	90.5	72.4
7.1d	Hispanic men aged 15-34	53.1	42.5
7.1e	Black women aged 15-34	20.0	16.0
7.1f	American Indians/Alaska Natives in Reservation States	14.1	11.3

10.1 Reduce deaths from work-related injuries to no more than 4 per 100,000 full-time workers. (Baseline: Average of 6 per 100,000 during 1983-87)

Special Population Targets

	Work-Related Deaths (per 100,000)	*1983-87 Average*	*2000 Target*
10.1a	Mine workers	30.3	21
10.1b	Construction workers	25.0	17
10.1c	Transportation workers	15.2	10
10.1d	Farm workers	14.0	9.5

13.6 Reduce destructive periodontal diseases to a prevalence of no more than 15 percent among people aged 35 through 44. (Baseline: 24 percent in 1985-86)

Note: Destructive periodontal disease is one or more sites with 4 millimeters or greater loss of tooth attachment.

16.1* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people. (Age-adjusted baseline: 38 per 100,000 in 1986)

Special Population Targets

	Diabetes-Related Deaths (per 100,000)	*1986 Baseline*	*2000 Target*
17.9a	Blacks	65	58
17.9b	American Indians/Alaska Natives	54	48

Note: Diabetes-related deaths refer to deaths from diabetes as an underlying or contributing cause.

17.10 Reduce the most severe complications of diabetes as follows:

Complications Among People With Diabetes	*1988 Baseline*	*2000 Target*
End-stage renal disease	1.5/1,000[†]	1.4/1,000
Blindness	2.2/1,000	1.4/1,000
Lower extremity amputation	8.2/1,000[†]	4.9/1,000
Perinatal mortality[‡]	5%	2%
Major congenital malformations[‡]	8%	4%

[†] *1987 baseline* [‡] *Among infants of women with established diabetes*

Special Population Targets for ESRD

	ESRD Due to Diabetes (per 1,000)	*1983-86 Baseline*	*2000 Target*
17.10a	Blacks with diabetes	2.2	2
17.10b	American Indians/Alaska Natives with diabetes	2.1	1.9

Special Population Target for Amputations

	Lower Extremity Amputations Due to Diabetes (per 1,000)	*1984-87 Baseline*	*2000 Target*
17.10c	Blacks with diabetes	10.2	6.1

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

20.3* Reduce viral hepatitis as follows:

(Per 100,000)	*1987 Baseline*	*2000 Target*
Hepatitis B (HBV)	63.5	40
Hepatitis A	31	23
Hepatitis C	18.3	13.7

Special Population Targets for HBV

	HBV Cases	*1987 Estimated Baseline*	*2000 Target*
20.3a	Intravenous drug abusers	30,000	22,500
20.3b	Heterosexually active people	33,000	22,000
20.3c	Homosexual men	25,300	8,500
20.3d	Children of Asians/Pacific Islanders	8,900	1,800
20.3e	Occupationally exposed workers	6,200	1,250
20.3f	Infants	3,500	550 new carriers
20.3g	Alaska Natives	15	1

20.4 Reduce tuberculosis to an incidence of no more than 3.5 cases per 100,000 people. (Baseline: 9.1 per 100,000 in 1988)

Special Population Targets

	Tuberculosis Cases (per 100,000)	*1988 Baseline*	*2000 Target*
20.4a	Asians/Pacific Islanders	36.3	15
20.4b	Blacks	28.3	10
20.4c	Hispanics	18.3	5
20.4d	American Indians/Alaska Natives	18.1	5

Key Risk Reduction Objectives Targeting Adults

2.5* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

2.6* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of vegetables and fruits and 3 servings of grain products for women aged 19 through 50 in 1985)

4.8 Reduce alcohol consumption by people aged 14 and older to an annual average of no more than 2 gallons of ethanol per person. (Baseline: 2.54 gallons of ethanol in 1987)

5.7 Increase the effectiveness with which family planning methods are used, as measured by a decrease to no more than 5 percent in the proportion of couples experiencing pregnancy despite use of a contraceptive method. (Baseline: Approximately 10 percent of women using reversible contraceptive methods experienced an unintended pregnancy in 1982)

6.8 Increase to at least 20 percent the proportion of people aged 18 and older who seek help in coping with personal and emotional problems. (Baseline: 11.1 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*
6.8a	People with disabilities	14.7%	30%

15.4 Increase to at least 50 percent the proportion of people with high blood pressure whose blood pressure is under control. (Baseline: 11 percent controlled among people aged 18 through 74 in 1976-80; an estimated 24 percent for people aged 18 and older in 1982-84)

Special Population Target

	High Blood Pressure Control	*1976-80 Baseline*	*1982-84 Baseline*	*2000 Target*
15.4a	Men with high blood pressure	6%	16%	40%

Note: People with high blood pressure have blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or take antihypertensive medication. Blood pressure control is defined as maintaining a blood pressure less than 140 mm Hg systolic and 90 mm Hg diastolic. In NHANES II and the Seven States Study, control of hypertension did not include nonpharmacologic treatment. In NHANES III, those controlling their high blood pressure without medication (e.g., through weight loss, low sodium diets, or restriction of alcohol) will be included.

15.6 Reduce the mean serum cholesterol level among adults to no more than 200 mg/dL. (Baseline: 213 mg/dL among people aged 20 through 74 in 1976-80, 211 mg/dL for men and 215 mg/dL for women)

17.11 Reduce diabetes to an incidence of no more than 2.5 per 1,000 people and a prevalence of no more than 25 per 1,000 people. (Baselines: 2.9 per 1,000 in 1987; 28 per 1,000 in 1987)

Special Population Targets

	Prevalence of Diabetes (per 1,000)	*1982-84 Baseline*[†]	*2000 Target*
17.11a	American Indians/Alaska Natives	69[‡]	62
17.11b	Puerto Ricans	55	49
17.11c	Mexican Americans	54	49
17.11d	Cuban Americans	36	32
17.11e	Blacks	36[§]	32

[†] *1982-84 baseline for people aged 20-74*

[‡] *1987 baseline for American Indians/Alaska Natives aged 15 and older*

[§] *1987 baseline for blacks of all ages*

Key Services and Protection Objectives Targeting Adults

8.5 Increase to at least 50 percent the proportion of postsecondary institutions with institutionwide health promotion programs for students, faculty, and staff. (Baseline: At least 20 percent of higher education institutions offered health promotion activities for students in 1989-90)

16.11 Increase to at least 80 percent the proportion of women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 36 percent of women aged 40 and older "ever" in 1987; 25 percent of women aged 50 and older "within the preceding 2 years" in 1987)

Special Population Targets

	Clinical Breast Exam & Mammogram:	*1987 Baseline*	*2000 Target*
	Ever Received—		
16.11a	Hispanic women aged 40 and older	20%	80%
16.11b	Low-income women aged 40 and older (annual family income <$10,000)	22%	80%
16.11c	Women aged 40 and older with less than high school education	23%	80%
16.11d	Women aged 70 and older	25%	80%
16.11e	Black women aged 40 and older	28%	80%
	Received Within Preceding 2 Years—		
16.11a	Hispanic women aged 50 and older	18%	60%
16.11b	Low-income women aged 50 and older (annual family income <$10,000)	15%	60%
16.11c	Women aged 50 and older with less than high school education	16%	60%
16.11d	Women aged 70 and older	18%	60%
16.11e	Black women aged 50 and older	19%	60%

16.12 Increase to at least 95 percent the proportion of women aged 18 and older with uterine cervix who have ever received a Pap test, and to at least 85 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 88 percent "ever" and 75 percent "within the preceding 3 years" in 1987)

Special Population Targets

	Pap Test:	*1987 Baseline*	*2000 Target*
	Ever Received—		
16.12a	Hispanic women aged 18 and older	75%	95%
16.12b	Women aged 70 and older	76%	95%
16.12c	Women aged 18 and older with less than high school education	79%	95%
16.12d	Low-income women aged 18 and older (annual family income <$10,000)	80%	95%
	Received Within Preceding 3 Years—		
16.12a	Hispanic women aged 18 and older	66%	80%
16.12b	Women aged 70 and older	44%	70%
16.12c	Women aged 18 and older with less than high school education	58%	75%
16.12d	Low-income women aged 18 and older (annual family income <$10,000)	64%	80%

16.13 Increase to at least 50 percent the proportion of people aged 50 and older who have received fecal occult blood testing within the preceding 1 to 2 years, and to at least 40 percent those who have ever received proctosigmoidoscopy. (Baseline: 27 percent received fecal occult blood testing during the preceding 2 years in 1987; 25 percent had ever received proctosigmoidoscopy in 1987)

21.2 Increase to at least 50 percent the proportion of people who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Special Population Targets

	Receipt of Recommended Services	*Baseline*	*2000 Target*
21.2d	Adults aged 19-39	—	40%
21.2e	Adults aged 40-64	—	40%
21.2f	Adults aged 65 and older	—	40%
21.2g	Low-income people	—	50%
21.2h	Blacks	—	50%
21.2i	Hispanics	—	50%
21.2j	Asians/Pacific Islanders	—	50%
21.2k	American Indians/Alaska Natives	—	70%
21.2l	People with disabilities	—	80%

Related Objectives From Other Priority Areas

Physical Activity

1.1 Coronary heart disease
1.3 Regular moderate physical activity
1.4 Regular vigorous physical activity
1.5 Sedentary lifestyle
1.6 Muscular strength, endurance, and flexibility
1.10 Worksite fitness programs
1.11 Community fitness facilities

Nutrition

2.3 Overweight
2.7 Weight loss practices
2.8 Calcium intake
2.9 Salt and sodium intake
2.13 Use of food labels
2.20 Worksite nutrition/weight management programs

Tobacco

3.4 Cigarette smoking
3.6 Smoking cessation attempts
3.11 Worksite smoking policies
3.12 Clean indoor air laws

Alcohol and Other Drug Use

4.8 Alcohol consumption
4.14 Worksite alcohol and drug policies
4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Family Planning

5.3 Infertility

Mental Health and Mental Disorders

6.5 Adverse health effects from stress
6.6 Use of community support programs
6.7 Depression
6.8 Seeking help with problems
6.9 Taking steps to control stress
6.10 Suicide prevention in jails
6.11 Worksite stress management programs

Violent and Abusive Behavior

7.5 Partner abuse
7.6 Assault injuries

Educational and Community-Based Programs

8.10 Community health promotion programs

Environmental Health

11.6 Radon testing
11.8 Solid waste
11.11 Home testing for lead-based paint

Oral Health

13.6 Periodontal diseases

Heart Disease and Stroke

15.4 Controlled high blood pressure
15.7 High blood cholesterol prevalence
15.13 Blood pressure screening
15.14 Blood cholesterol screening

Cancer

16.3 Breast cancer
16.4 Cervical cancer
16.5 Colorectal cancer
16.9 Actions to reduce sun exposure
16.14 Oral, skin, and digital rectal examinations

Diabetes and Chronic Disabling Conditions

17.1 Years of healthy life
17.2 Disability due to chronic conditions
17.6 Hearing impairment
17.7 Vision impairment
17.11 Diabetes incidence and prevalence
17.17 Clinician assessment of cognitive and other functioning in older adults

Immunization and Infectious Diseases

20.15 Financial barriers to immunization

Clinical Preventive Services

21.3 Access to primary care
21.4 Financial barriers to receipt of services
21.6 Provision of recommended services by clinicians

Surveillance and Data Systems

22.4 Gaps in health data

Older Adults

Introduction

Life expectancy has increased dramatically since 1900 and people who reach the age of 65 can expect to live well into their eighties. The most important aspect of health promotion among older people is to maintain health and functional independence. Although it is commonly believed that health problems in old age are inevitable, many are in fact preventable or can be controlled.

The leading causes of death among people aged 65 and older include heart disease, cancer, stroke, chronic obstructive pulmonary disease, pneumonia and influenza. Although health problems such as osteoporosis, arthritis, incontinence, dementia, and visual or hearing impairments, are not common causes of death, they have a significant effect on the quality of life. Even in later life, changing certain risk behaviors into healthy ones can improve health and reduce the likelihood of disability. Improvements in diet and nutrition, reductions in tobacco use, and weight control can enhance the health of older people. Physical activity is a key ingredient to healthy aging.

In addition to primary prevention, strong social support and regular primary care services are important aspects of risk reduction for older adults.

Presented below are the key year 2000 national health objectives targeting improvements in the health of older adults. The objectives are presented in numeric order, by type of objective (e.g., health status, risk reducation, and services and protection). The opportunities presented by these objectives can be summarized, in part, by a target for reducing the proportion of people aged 65 and older who are limited in two or more activities of daily living:

Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities (a reduction of about 19 percent), thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

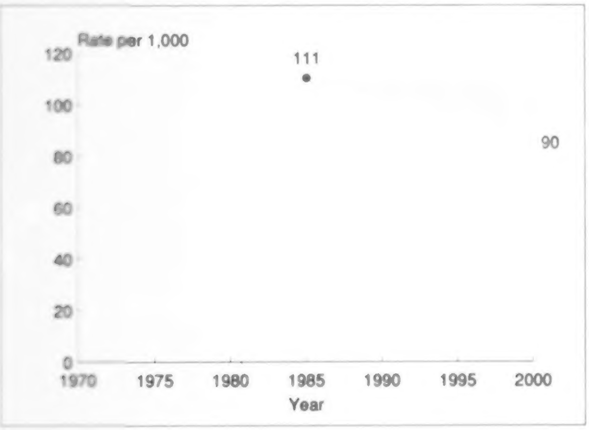

Fig. E

People aged 65 and older who have difficulty performing two or more personal care activities

Key Health Status Objectives Targeting Older Adults

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

6.1c* Reduce suicides among white men aged 65 and older to no more than 39.2 per 100,000. (Age-adjusted baseline: 46.1 per 100,000 in 1987)

9.3c Reduce deaths among people aged 70 and older caused by motor vehicle crashes to no more than 20 per 100,000. (Baseline: 22.6 per 100,000 in 1987)

9.4a Reduce deaths among people aged 65 through 84 from falls and fall-related injuries to no more than 14.4 per 100,000. (Baseline: 18 per 100,000 in 1987)

9.4b Reduce deaths among people aged 85 and older from falls and fall-related injuries to no more than 105 per 100,000. (Baseline: 131.2 per 100,000 in 1987)

9.6b Reduce residential fire deaths among people aged 65 and older to no more than 3.3 per 100,000. (Baseline: 4.4 per 100,000 in 1987)

9.7 Reduce hip fractures among people aged 65 and older so that hospitalizations for this condition are no more than 607 per 100,000. (Baseline: 714 per 100,000 in 1988)

Special Population Target

	Hip Fractures (per 100,000)	*1988 Baseline*	*2000 Target*
9.7a	White women aged 85 and older	2,721	2,177

13.4 Reduce to no more than 20 percent the proportion of people aged 65 and older who have lost all of their natural teeth. (Baseline: 36 percent in 1986)

Special Population Target

	Complete Tooth Loss Prevalence	*1986 Baseline*	*2000 Target*
13.4a	Low-income people (annual family income <$15,000)	46%	25%

17.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
17.1a	Blacks	56	60
17.1b	Hispanics	62	65
17.1c	People aged 65 and older	12[†]	14[†]

[†] *Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

17.3 Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities, thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

Special Population Target

	Difficulty Performing Self-Care Activities (per 1,000)	*1984-85 Baseline*	*2000 Target*
17.3a	People aged 85 and older	371	325

Note: Personal care activities are bathing, dressing, using the toilet, getting in and out of bed or chair, and eating.

17.6a Reduce significant hearing impairment among people aged 45 and older to a prevalence of no more than 180 per 1,000. (Baseline: Average of 203 per 1,000 during 1986-88)

Note: Hearing impairment covers the range of hearing deficits from mild loss in one ear to profound loss in both ears. Generally, inability to hear sounds at levels softer (less intense) than 20 decibels (dB) constitutes abnormal hearing. Significant hearing impairment is defined as having hearing thresholds for speech poorer than 25 dB. However, for this objective, self-reported hearing impairment (i.e., deafness in one or both ears or any trouble hearing in one or both ears) will be used as a proxy measure for significant hearing impairment.

17.7a Reduce significant visual impairment among people aged 65 and older to a prevalence of no more than 70 per 1,000. (Baseline: Average of 87.1 per 1,000 during 1986-88)

Note: Significant visual impairment is generally defined as a permanent reduction in visual acuity and/or field of vision which is not correctable with eyeglasses or contact lenses. Severe visual impairment is defined as inability to read ordinary newsprint even with corrective lenses. For this objective, self-reported blindness in one or both eyes and other self-reported visual impairments (i.e., any trouble seeing with one or both eyes even when wearing glasses or colorblindness) will be used as a proxy measure for significant visual impairment.

20.2 Reduce epidemic-related pneumonia and influenza deaths among people aged 65 and older to no more than 7.3 per 100,000. (Baseline: Average of 9.1 per 100,000 during 1980 through 1987)

Epidemic-related pneumonia and influenza deaths are those that occur above and beyond the normal yearly fluctuations of mortality. Because of the extreme variability in epidemic-related deaths from year to year, the target is a 3-year average.

20.10 Reduce pneumonia-related days of restricted activity as follows:

	1987 Baseline	*2000 Target*
People aged 65 and older (per 100 people)	48 days	38 days

Key Risk Reduction Objectives Targeting Older Adults

1.3* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

1.5a Reduce to no more than 22 percent the proportion of people aged 65 and older who engage in no leisure-time physical activity. (Baseline: 43 percent in 1985)

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

20.11 Increase immunization levels as follows:

Pneumococcal pneumonia and influenza immunization among institutionalized chronically ill or older people: at least 80 percent. (Baseline data available in 1992)

21.2f Increase to at least 40 percent the proportion of adults aged 65 and older who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Key Services and Protection Objectives Targeting Older Adults

2.18 Increase to at least 80 percent the receipt of home food services by people aged 65 and older who have difficulty in preparing their own meals or are otherwise in need of home-delivered meals. (Baseline data available in 1991)

8.8 Increase to at least 90 percent the proportion of people aged 65 and older who had the opportunity to participate during the preceding year in at least one organized health promotion program through a senior center, lifecare facility, or other community-based setting that serves older adults. (Baseline data available in 1992)

9.20 Increase to at least 30 the number of States that have design standards for signs, signals, markings, lighting, and other characteristics of the roadway environment to improve the visual stimuli and protect the safety of older drivers and pedestrians. (Baseline data available in 1992)

12.6 Increase to at least 75 percent the proportion of primary care providers who routinely review with their patients aged 65 and older all prescribed and over-the-counter medicines taken by their patients each time a new medication is prescribed. (Baseline data available in 1992)

13.13 Extend to all long-term institutional facilities the requirement that oral examinations and services be provided no later than 90 days after entry into these facilities. (Baseline: Nursing facilities receiving Medicaid or Medicare reimbursement will be required to provide for oral examinations within 90 days of patient entry beginning in 1990; baseline data unavailable for other institutions)

Note: Long-term institutional facilities include nursing homes, prisons, juvenile homes, and detention facilities.

13.14b Increase to at least 60 percent the proportion of people aged 65 and older using the oral health care system during each year. (Baseline: 42 percent in 1986)

16.11 Increase to at least 80 percent the proportion of women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 36 percent of women aged 40 and older "ever" in 1987; 25 percent of women aged 50 and older "within the preceding 2 years" in 1987)

Special Population Targets

	Clinical Breast Exam & Mammogram:	*1987 Baseline*	*2000 Target*
	Ever Received—		
16.11a	Hispanic women aged 40 and older	20%	80%
16.11b	Low-income women aged 40 and older (annual family income <$10,000)	22%	80%
16.11c	Women aged 40 and older with less than high school education	23%	80%
16.11d	Women aged 70 and older	25%	80%
16.11e	Black women aged 40 and older	28%	80%
	Received Within Preceding 2 Years—		
16.11a	Hispanic women aged 50 and older	18%	60%
16.11b	Low-income women aged 50 and older (annual family income <$10,000)	15%	60%
16.11c	Women aged 50 and older with less than high school education	16%	60%
16.11d	Women aged 70 and older	18%	60%
16.11e	Black women aged 50 and older	19%	60%

16.12b Increase to at least 95 percent the proportion of women aged 70 and older with uterine cervix who have ever received a Pap test, and to at least 70 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 76 percent "ever" and 44 percent "within the preceding 3 years" in 1987)

16.13 Increase to at least 50 percent the proportion of people aged 50 and older who have received fecal occult blood testing within the preceding 1 to 2 years, and to at least 40 percent those who have ever received proctosigmoidoscopy. (Baseline: 27 percent received fecal occult blood testing during the preceding 2 years in 1987; 25 percent had ever received proctosigmoidoscopy in 1987)

16.14 Increase to at least 40 percent the proportion of people aged 50 and older visiting a primary care provider in the preceding year who have received oral, skin, and digital rectal examinations during one such visit. (Baseline: An estimated 27 percent received a digital rectal exam during a physician visit within the preceding year in 1987)

17.17 Increase to at least 60 percent the proportion of providers of primary care for older adults who routinely evaluate people aged 65 and older for urinary incontinence and impairments of vision, hearing, cognition, and functional status. (Baseline data available in 1992)

17.18 Increase to at least 90 percent the proportion of perimenopausal women who have been counseled about the benefits and risks of estrogen replacement therapy (combined with progestin, when appropriate) for prevention of osteoporosis. (Baseline data available in 1991)

Related Objectives From Other Priority Areas

Physical Activity
1.1 Coronary heart disease
1.4 Vigorous physical activity
1.11 Community fitness facilities
1.12 Clinician counseling about physical activity

Nutrition
2.3 Overweight
2.5 Dietary fat intake
2.6 Daily intake of fruits, vegetables, and grain products
2.7 Weight loss practices
2.9 Salt and sodium intake
2.13 Use of food labels
2.18 Home delivered meals for older adults
2.21 Nutrition assessment, counseling, and referral by clinicians

Tobacco
3.4 Cigarette smoking
3.6 Smoking cessation attempts
3.12 Clean indoor air laws
3.16 Cessation counseling and followup by clinicians

Alcohol and Other Drugs
4.8 Alcohol consumption
4.19 Screening, counseling, and referral by clinicians for alcohol/drug problems

Mental Health and Mental Disorders
6.5 Adverse health effects from stress
6.7 Depression
6.8 Seeking help with problems
6.9 Taking steps to control stress

Violent and Abusive Behavior
7.12 Emergency room protocols

Educational and Community-Based Programs
8.10 Community health promotion programs

Unintentional Injuries
9.12 Motor vehicle occupant protection systems
9.16 Fire suppression sprinkler installation
9.17 Smoke detectors
9.21 Injury prevention counseling by clinicians

Environmental Health
11.5 Criteria air pollutants

Food and Drug Safety
12.5 Linked pharmacy systems

Heart Disease and Stroke
15.4 Controlled high blood pressure
15.5 Taking action to control blood pressure
15.7 High blood cholesterol prevalence
15.8 Taking action to reduce blood cholesterol
15.13 Blood pressure screening
15.14 Blood cholesterol screening

Cancer
16.3 Breast cancer
16.4 Cervical cancer
16.5 Colorectal cancer
16.10 Tobacco, diet, and cancer screening counseling by clinicians

Diabetes and Chronic Disabling Conditions
17.5 Activity limitation due to chronic back conditions
17.9 Diabetes-related deaths
17.10 Diabetes-related complications
17.11 Diabetes incidence and prevalence
17.14 Patient education for chronic and disabling conditions

Immunization and Infectious Diseases
20.15 Financial barriers to immunizations
20.16 Public health department provision of immunizations
20.17 Tuberculosis identification

Clinical Preventive Services
21.3 Access to primary care
21.4 Financial barriers to receipt of services
21.5 Clinical preventive services from publicly funded programs

Surveillance and Data Systems
22.4 Gaps in health data

Special Population Objectives

Contents

- People with Low Income
- Blacks
- Hispanics
- Asians and Pacific Islanders
- American Indians and Alaska Natives
- People with Disabilities

Special Population Objectives

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

Objectives Targeting People with Low Income

1.4a Increase to at least 12 percent the proportion of lower-income people aged 18 and older (annual family income less than $20,000) who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 7 percent in 1985)

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

1.5c Reduce to no more than 17 percent the proportion of lower-income people aged 18 and older (annual family income less than $20,000) who engage in no leisure-time physical activity. (Baseline: 32 percent in 1985)

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

2.3a* Reduce overweight to a prevalence of no more than 25 percent among low-income women aged 20 and older. (Baseline: 37 percent for low-income women aged 20 through 74 in 1976-80)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent. (Baseline: Up to 16 percent among low-income children in 1988, depending on age and race/ethnicity)

2.4a Reduce growth retardation among low-income black children younger than age 1 to less than 10 percent. (Baseline: 15 percent in 1988)

2.4b Reduce growth retardation among low-income Hispanic children younger than age 1 to less than 10 percent. (Baseline: 13 percent in 1988)

2.4c Reduce growth retardation among low-income Hispanic children aged 1 to less than 10 percent. (Baseline: 16 percent in 1988)

2.4d Reduce growth retardation among low-income Asian and Pacific Islander children aged 1 to less than 10 percent. (Baseline: 14 percent in 1988)

2.4e Reduce growth retardation among low-income Asian and Pacific Islander children aged 2 through four to less than 10 percent. (Baseline: 16 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

2.10a Reduce iron deficiency to less than 10 percent among low-income children aged 1 through 2. (Baseline: 21 percent in 1976-80)

2.10b Reduce iron deficiency to less than 5 percent among low-income children aged 3 through 4. (Baseline: 10 percent in 1976-80)

2.10c Reduce iron deficiency to less than 4 percent among low-income women of childbearing age. (Baseline: 8 percent of women aged 20 through 44 in 1976-80)

2.10e Reduce the prevalence of anemia to less than 20 percent among black, low-income pregnant women. (Baseline: 41 percent of those aged 15 through 44 in their third trimester in 1988)

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

3.5a Reduce the initiation of cigarette smoking by lower socioeconomic status youth so that no more than 18 percent have become regular cigarette smokers by age 20. (Baseline: 40 percent of youth with a high school education or less had become regular cigarette smokers by ages 20 through 24 in 1987)

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

11.4a Reduce the prevalence of blood lead levels exceeding 15 µg/dL and 25 µg/dL among inner-city low-income black children (annual family income less than $6,000 in 1984 dollars) to no more than 75,000 and zero, respectively. (Baseline: An estimated 234,900 had levels exceeding 15 µg/dL, and 36,700 had levels exceeding 25 µg/dL, in 1984)

13.4a Reduce to no more than 25 percent the proportion of low-income people (annual family income less than $15,000) aged 65 and older who have lost all of their natural teeth. (Baseline: 46 percent in 1986)

13.5a Reduce the prevalence of gingivitis among low-income people (annual family income less than $12,500) aged 35 through 44 to no more than 35 percent. (Baseline: 50 percent in 1985-86)

14.9a* Increase to at least 75 percent the proportion of low-income mothers who breastfeed their babies in the early postpartum period, and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 32 percent at discharge from birth site and 9 percent at 5 to 6 months in 1988)

16.11b Increase to at least 80 percent the proportion of low-income women (annual family income less than $10,000) aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 22 percent of women aged 40 and older ever in 1987; 15 percent of women aged 50 and older "within the preceding 2 years" in 1987)

16.12d Increase to at least 95 percent the proportion of low-income women (annual family income less than $10,000) aged 18 and older with uterine cervix who have ever received a Pap test, and to at least 80 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 80 percent "ever" and 64 percent "within the preceding 3 years" in 1987)

17.2a Reduce to no more than 15 percent the proportion of low-income people (annual family income of less than $10,000 in 1988) who experience a limitation in major activity due to chronic conditions. (Baseline: 18.9 percent in 1988)

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

21.2g Increase to at least 50 percent the proportion of low-income people who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

21.3c Increase to at least 95 percent the proportion of low-income people who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: 80 percent in 1986, as 20 percent reported having no physician, clinic, or hospital as a regular source of care)

22.4 Develop and implement a national process to identify significant gaps in the nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Objectives Targeting Blacks

2.3b* Reduce overweight to a prevalence of no more than 30 percent among black women aged 20 and older. (Baseline: 44 percent for black women aged 20 through 74 in 1976-80)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.4a Reduce growth retardation among low-income black children younger than age 1 to less than 10 percent. (Baseline: 15 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

2.10e Reduce the prevalence of anemia to less than 20 percent among black, low-income pregnant women. (Baseline: 41 percent of those aged 15 through 44 in their third trimester in 1988)

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

3.4d* Reduce cigarette smoking to a prevalence of no more than 18 percent among blacks aged 20 and older. (Baseline: 34 percent in 1987)

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

4.2a Reduce cirrhosis deaths among black men to no more than 12 per 100,000 black men. (Age-adjusted baseline: 22 per 100,000 in 1987)

5.1a Reduce pregnancies among black adolescent girls aged 15 through 19 to no more than 120 per 1,000 black adolescents. (Baseline: 186 per 1,000 for non-white adolescents in 1985)

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

5.2a Reduce to no more than 40 percent the proportion of all pregnancies among black women that are unintended. (Baseline: 78 percent of pregnancies in the previous 5 years were unintended, either unwanted or earlier than desired, in 1988)

5.3a Reduce the prevalence of infertility among black couples to no more than 9 percent. (Baseline: 12.1 percent of married couples with wives aged 15 through 44 in 1988)

Note: Infertility is the failure of couples to conceive after 12 months of intercourse without contraception.

7.1c Reduce homicides among black men aged 15 through 34 to no more than 72.4 per 100,000 black men. (Baseline: 90.5 per 100,000 in 1987)

7.1e Reduce homicides among black women aged 15 through 34 to no more than 16.0 per 100,000 black women. (Baseline: 20.0 per 100,000 in 1987)

8.1a* Increase years of healthy life among blacks to at least 60 years. (Baseline: An estimated 56 years in 1980)

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

9.1b Reduce deaths among black males caused by unintentional injuries to no more than 51.9 per 100,000 black males. (Age-adjusted baseline: 64.9 per 100,000 in 1987)

9.4c Reduce deaths among black men aged 30 through 69 from falls and fall-related injuries to no more than 5.6 per 100,000 black men. (Baseline: 8 per 100,000 in 1987)

9.5c Reduce drowning deaths among black males to no more than 3.6 per 100,000 black males. (Age-adjusted baseline: 6.6 per 100,000 in 1987)

9.6c Reduce residential fire deaths among black males to no more than 4.3 per 100,000 black males. (Age-adjusted baseline: 5.7 per 100,000 in 1987)

9.6d Reduce residential fire deaths among black females to no more than 2.6 per 100,000 black females. (Age-adjusted baseline: 3.4 per 100,000 in 1987)

11.1a Reduce asthma morbidity among blacks, as measured by a reduction in asthma hospitalizations to no more than 265 per 100,000 blacks. (Baseline: 334 per 100,000 blacks and other non-whites in 1987)

11.4a Reduce the prevalence of blood lead levels exceeding 15 µg/dL and 25 µg/dL among inner-city low-income black children (annual family income less than $6,000 in 1984 dollars) to no more than 75,000 and zero, respectively. (Baseline: An estimated 234,900 had levels exceeding 15 µg/dL, and 36,700 had levels exceeding 25 µg/dL, in 1984)

13.1c Reduce dental caries (cavities) so that the proportion of black children aged 6 through 8 with one or more caries (in permanent or primary teeth) is no more than 40 percent. (Baseline: 61 percent in 1986-87)

13.2c Reduce untreated dental caries so that the proportion of black children with untreated caries (in permanent or primary teeth) is no more than 25 percent among children aged 6 through 8 and no more than 20 percent among adolescents aged 15. (Baseline: 38 percent of black children aged 6 through 8 in 1986-87; 38 percent of black adolescents aged 15 in 1986-87)

14.1a Reduce the infant mortality rate among blacks to no more than 11 per 1,000 live births. (Baseline: 17.9 per 1,000 live births in 1987)

14.1e Reduce the neonatal mortality rate among blacks to no more than 7 per 1,000 live births. (Baseline: 11.7 per 1,000 live births in 1987)

14.1h Reduce the postneonatal mortality rate among blacks to no more than 4 per 1,000 live births. (Baseline: 6.1 per 1,000 live births in 1987)

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

14.2a Reduce the fetal death rate (20 or more weeks of gestation) among blacks to no more than 7.5 per 1,000 live births plus fetal deaths. (Baseline: 12.8 per 1,000 live births plus fetal deaths in 1987)

14.3a Reduce the maternal mortality rate among blacks to no more than 5 per 100,000 live births. (Baseline: 14.2 per 100,000 live births in 1987)

Note: The objective uses the maternal mortality rate as defined by the National Center for Health Statistics. However, if other sources of maternal mortality data are used, a 50-percent reduction in maternal mortality is the intended target.

14.4b Reduce the incidence of fetal alcohol syndrome among blacks to no more than 0.4 per 1,000 live births. (Baseline: 0.8 per 1,000 live births in 1987)

14.5a Reduce low birth weight among blacks to an incidence of no more than 9 percent of live births and very low birth weight to no more than 2 percent of live births. (Baseline: 12.7 and 2.7 percent, respectively, in 1987)

Note: Low birth weight is weight at birth of less than 2,500 grams; very low birth weight is weight at birth of less than 1,500 grams.

14.9b* Increase to at least 75 percent the proportion of black mothers who breastfeed their babies in the early postpartum period, and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 25 percent at discharge from birth site and 8 percent at 5 to 6 months in 1988)

14.11a Increase to at least 90 percent the proportion of pregnant black women who receive prenatal care in the first trimester of pregnancy. (Baseline: 61.1 percent of live births in 1987)

15.1a* Reduce coronary heart disease deaths among blacks to no more than 115 per 100,000 blacks. (Age-adjusted baseline: 163 per 100,000 in 1987)

15.2a Reduce stroke deaths among blacks to no more than 27 per 100,000 blacks. (Age-adjusted baseline: 51.2 per 100,000 in 1987)

15.3a Reverse the increase in end-stage renal disease (requiring maintenance dialysis or transplantation) among blacks to attain an incidence of no more than 30 per 100,000 blacks. (Baseline: 32.4 per 100,000 in 1987)

15.5b Increase to at least 80 percent the proportion of black hypertensive men aged 18 through 34 who are taking action to help control their blood pressure. (Baseline: 63 percent of aware black hypertensive men aged 18 through 34 were taking action to control their blood pressure in 1985)

Note: High blood pressure is defined as blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or taking antihypertensive medication. Actions to control blood pressure include taking medication, dieting to lose weight, cutting down on salt, and exercising.

16.11e Increase to at least 80 percent the proportion of black women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 28 percent of black women aged 40 and older "ever" in 1987; 19 percent of black women aged 50 and older "within the preceding 2 years" in 1987)

17.2c Reduce to no more than 9 percent the proportion of blacks who experience a limitation in major activity due to chronic conditions. (Baseline: 11.2 percent in 1988)

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

17.9a Reduce diabetes-related deaths among blacks to no more than 58 per 100,000 blacks. (Age-adjusted baseline: 65 per 100,000 in 1986)

17.10a Reduce end-stage renal disease due to diabetes among blacks with diabetes to no more than 2 per 1,000 blacks with diabetes. (Baseline: 2.2 per 1,000 in 1983-86)

17.10c Reduce lower extremity amputations due to diabetes among blacks with diabetes to no more than 6.1 per 1,000 blacks with diabetes. (Baseline: 10.2 per 1,000 in 1984-87)

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

17.11e Reduce diabetes among blacks to a prevalence of no more than 32 per 1,000 blacks. (Baseline: 36 per 1,000 in 1987)

18.1b Confine annual incidence of diagnosed AIDS cases among blacks to no more than 37,000 cases. (Baseline: An estimated 14,000-15,000 cases diagnosed in 1989)

Note: Targets for this objective are equal to upper bound estimates of the incidence of diagnosed AIDS cases projected for 1993.

19.1a Reduce gonorrhea among blacks to an incidence of no more than 1,300 cases per 100,000 blacks. (Baseline: 1,990 per 100,000 in 1989)

19.3a Reduce primary and secondary syphilis among blacks to an incidence of no more 65 cases per 100,000 blacks. (Baseline: 118 per 100,000 in 1989)

20.4b Reduce tuberculosis among blacks to an incidence of no more than 10 cases per 100,000 blacks. (Baseline: 28.3 per 100,000 in 1988)

21.2h Increase to at least 50 percent the proportion of blacks who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

21.3b Increase to at least 95 percent the proportion of blacks who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: Less than 80 percent in 1986, as 20 percent reported having no physician, clinic, or hospital as a regular source of care)

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

	1985-1986 Baseline	*2000 Target*
Blacks	5%	8%

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

22.4 Develop and implement a national process to identify significant gaps in the Nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Objectives Targeting Hispanics

2.3c* Reduce overweight to a prevalence of no more than 25 percent among Hispanic women aged 20 and older. (Baseline: 39 percent for Mexican-American women aged 20 through 74, 34 percent for Cuban women aged 20 through 74, and 37 percent for Puerto Rican women aged 20 through 74 in 1982-84)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.4b Reduce growth retardation among low-income Hispanic children younger than age 1 to less than 10 percent. (Baseline: 13 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

2.4c Reduce growth retardation among low-income Hispanic children aged 1 to less than 10 percent. (Baseline: 16 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

3.4e* Reduce cigarette smoking to a prevalence of no more than 18 percent among Hispanics aged 20 and older. (Baseline: 33 percent in 1982-84)

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

5.1b Reduce pregnancies among Hispanic adolescent girls aged 15 through 19 to no more than 105 per 1,000 Hispanic adolescents. (Baseline: 158 per 1,000 in 1985)

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

5.3b Reduce the prevalence of infertility among Hispanic couples to no more than 9 percent. (Baseline: 12.4 percent of married couples with wives aged 15 through 44 in 1988)

Note: Infertility is the failure of couples to conceive after 12 months of intercourse without contraception.

7.1d Reduce homicides among Hispanic men aged 15 through 34 to no more than 42.5 per 100,000 Hispanic men. (Baseline: 53.1 per 100,000 in 1987)

8.1b* Increase years of healthy life among Hispanics to at least 65 years. (Baseline: An estimated 62 years in 1980)

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

13.2d Reduce untreated dental caries so that the proportion of Hispanic children with untreated caries (in permanent or primary teeth) is no more than 25 percent among children aged 6 through 8 and no more than 25 percent among adolescents aged 15. (Baseline: 36 percent of Hispanic children aged 6 through 8 in 1982-84; 31-47 percent of Hispanic adolescents aged 15 in 1982-84)

13.5c Reduce the prevalence of gingivitis among Hispanics aged 35 through 44 to no more than 50 percent. (Baseline: 74 percent among Mexican Americans; 79 percent among Cubans; 82 percent among Puerto Ricans; in 1982-84)

14.1c Reduce the infant mortality rate among Puerto Ricans to no more than 8 per 1,000 live births. (Baseline: 12.9 per 1,000 live births in 1984)

14.1f Reduce the neonatal mortality rate among Puerto Ricans to no more than 5.2 per 1,000 live births. (Baseline: 8.6 per 1,000 live births in 1984)

14.1j Reduce the postneonatal mortality rate among Puerto Ricans to no more than 2.8 per 1,000 live births. (Baseline: 4.3 per 1,000 live births in 1984)

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

14.9c* Increase to at least 75 percent the proportion of Hispanic mothers who breastfeed their babies in the early postpartum period, and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 51 percent at discharge from birth site and 16 percent at 5 to 6 months in 1988)

14.11c Increase to at least 90 percent the proportion of pregnant Hispanic women who receive prenatal care in the first trimester of pregnancy. (Baseline: 61.0 percent of live births in 1987)

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

16.11a Increase to at least 80 percent the proportion of Hispanic women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 20 percent of Hispanic women aged 40 and older "ever" in 1987; 18 percent of Hispanic women aged 50 and older "within the preceding 2 years" in 1987)

16.12a Increase to at least 95 percent the proportion of Hispanic women with uterine cervix who have ever received a Pap test, and to at least 80 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 75 percent "ever" and 66 percent "within the preceding 3 years" in 1987)

17.11b Reduce diabetes among Puerto Ricans to a prevalence of no more than 49 per 1,000 Puerto Ricans. (Baseline: 55 per 1,000 aged 20 through 74 in 1982-84)

17.11c Reduce diabetes among Mexican Americans to a prevalence of no more than 49 per 1,000 Mexican Americans. (Baseline: 54 per 1,000 aged 20 through 74 in 1982-84)

17.11d Reduce diabetes among Cuban Americans to a prevalence of no more than 32 per 1,000 Cuban Americans. (Baseline: 36 per 1,000 aged 20 through 74 in 1982-84)

18.1c Confine annual incidence of diagnosed AIDS cases among Hispanics to no more than 18,000 cases. (Baseline: An estimated 7,000-8,000 cases diagnosed in 1989)

Note: Targets for this objective are equal to upper bound estimates of the incidence of diagnosed AIDS cases projected for 1993.

20.4c Reduce tuberculosis among Hispanics to an incidence of no more than 5 cases per 100,000 Hispanics. (Baseline: 18.3 per 100,000 in 1988)

21.2i Increase to at least 50 percent the proportion of Hispanics who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

21.3a Increase to at least 95 percent the proportion of Hispanics who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: Less than 70 percent in 1986, as 30 percent reported having no physician, clinic, or hospital as a regular source of care)

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

	1985-1986 Baseline	*2000 Target*
Hispanics	3%	6.4%

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

22.4 Develop and implement a national process to identify significant gaps in the nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Objectives Targeting Asians and Pacific Islanders

2.4d Reduce growth retardation among low-income Asian and Pacific Islander children aged 1 to less than 10 percent. (Baseline: 14 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

2.4e Reduce growth retardation among low-income Asian and Pacific Islander children aged 2 through four to less than 10 percent. (Baseline: 16 percent in 1988)

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

3.4g* Reduce cigarette smoking to a prevalence of no more than 20 percent among Southeast Asian men. (Baseline: 55 percent in 1984-88)

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

20.3d* Reduce Hepatitis B (HBV) among children of Asians and Pacific Islanders to no more than 1,800 cases. (Baseline: An estimated 8,900 cases in 1987)

20.4a Reduce tuberculosis among Asians and Pacific Islanders to an incidence of no more than 15 cases per 100,000 Asians and Pacific Islanders. (Baseline: 36.3 per 100,000 in 1988)

21.2j Increase to at least 50 percent the proportion of Asians and Pacific Islanders who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

22.4 Develop and implement a national process to identify significant gaps in the nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Objectives Targeting American Indians and Alaska Natives

2.3d* Reduce overweight to a prevalence of no more than 30 percent among American Indians and Alaska Natives. (Baseline: An estimated 29-75 percent for different tribes in 1984-88)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.10d Reduce the prevalence of anemia to less than 10 percent among Alaska native children aged 1 through 5. (Baseline: 22-28 percent in 1983-85)

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

3.4f* Reduce cigarette smoking to a prevalence of no more than 20 percent among American Indians and Alaska Natives. (Baseline: An estimated 42-70 percent for different tribes in 1979-87)

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

3.9a Reduce smokeless tobacco use by American Indian and Alaska Native youth to a prevalence of no more than 10 percent. (Baseline: 18-64 percent in 1987)

Note: For males aged 12 through 17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18 through 24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

4.1a Reduce deaths among American Indian and Alaska Native men caused by alcohol-related motor vehicle crashes to no more than 44.8 per 100,000 American Indian and Alaska Native men. (Age-adjusted baseline: 52.2 per 100,000 in 1987)

4.2b Reduce cirrhosis deaths among American Indians and Alaska Natives to no more than 13 per 100,000 American Indians and Alaska Natives. (Age-adjusted baseline: 25.9 per 100,000 in 1987)

6.1d* Reduce suicides among American Indian and Alaska Native men in Reservation States to no more than 12.8 per 100,000 American Indian and Alaska Native men. (Age-adjusted baseline: 15 per 100,000 in 1987)

7.1f Reduce homicides among American Indians and Alaska Natives in Reservation States to no more than 11.3 per 100,000 American Indians and Alaska Natives. (Age-adjusted baseline: 14.1 per 100,000 in 1987)

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

9.1a Reduce deaths among American Indians and Alaska Natives caused by unintentional injuries to no more than 66.1 per 100,000 American Indians and Alaska Natives. (Age-adjusted baseline: 82.6 per 100,000 in 1987)

9.3d Reduce deaths among American Indians and Alaska Natives caused by motor vehicle crashes to no more than 39.2 per 100,000 American Indians and Alaska Natives. (Age-adjusted baseline: 46.8 per 100,000 in 1987)

13.1b Reduce dental caries (cavities) so that the proportion of American Indian and Alaska Native children aged 6 through 8 with one or more caries (in permanent or primary teeth) is no more than 45 percent. (Baseline: 92 percent in primary teeth and 52 percent in permanent teeth in 1983-84)

13.1d Reduce dental caries (cavities) so that the proportion of American Indian and Alaska Native adolescents aged 15 with one or more caries (in permanent or primary teeth) is no more than 70 percent. (Baseline: 93 percent in permanent teeth in 1983-84)

13.2b Reduce untreated dental caries so that the proportion of American Indian and Alaska Native children with untreated caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 40 percent among adolescents aged 15. (Baseline: 64 percent of American Indian and Alaska Native children aged 6 through 8 in 1983-84; 84 percent of American Indian and Alaska Native adolescents aged 15 in 1983-84)

13.5b Reduce the prevalence of gingivitis among American Indians and Alaska Natives aged 35 through 44 to no more than 50 percent. (Baseline: 95 percent in 1983-84)

13.11b* Increase to at least 65 percent the proportion of American Indian and Alaska Native parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

14.1b Reduce the infant mortality rate among American Indians and Alaska Natives to no more than 8.5 per 1,000 live births. (Baseline: 12.5 per 1,000 live births in 1984)

14.1i Reduce the postneonatal mortality rate among American Indians and Alaska Natives to no more than 4 per 1,000 live births. (Baseline: 6.5 per 1,000 live births in 1984)

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

14.4a Reduce the incidence of fetal alcohol syndrome among American Indians and Alaska Natives to no more than 2 per 1,000 live births. (Baseline: 4 per 1,000 live births in 1987)

14.9d* Increase to at least 75 percent the proportion of American Indian and Alaska Native mothers who breastfeed their babies in the early postpartum period, and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 47 percent at discharge from birth site and 28 percent at 5 to 6 months in 1988)

14.11b Increase to at least 90 percent the proportion of pregnant American Indian and Alaskan Native women who receive prenatal care in the first trimester of pregnancy. (Baseline: 60.2 percent of live births in 1987)

17.2b Reduce to no more than 11 percent the proportion of American Indians and Alaska Natives who experience a limitation in major activity due to chronic conditions. (Baseline: 13.4 percent in 1983-85)

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

17.9b Reduce diabetes-related deaths among American Indians and Alaska Natives to no more than 48 per 100,000 American Indians and Alaska Natives. (Age-adjusted baseline: 54 per 100,000 in 1986)

Note: Diabetes-related deaths refer to deaths from diabetes as an underlying or contributing cause.

17.10b Reduce end-stage renal disease due to diabetes among American Indians and Alaska Natives with diabetes to no more than 1.9 per 1,000 American Indians and Alaska Natives with diabetes. (Baseline: 2.1 per 1,000 in 1983-86)

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

17.11a Reduce diabetes among American Indians and Alaska Natives to a prevalence of no more than 62 per 1,000 American Indians and Alaska Natives. (Baseline: 69 per 1,000 aged 15 and older in 1987)

20.3g* Reduce Hepatitis B (HBV) among Alaska Natives to no more than 1 case. (Baseline: An estimated 15 cases in 1987)

20.4d Reduce tuberculosis among American Indians and Alaska Natives to an incidence of no more than 5 cases per 100,000 American Indians and Alaska Natives. (Baseline: 18.1 per 100,000 in 1988)

20.7a Reduce bacterial meningitis among Alaska Natives to no more than 8 cases per 100,000 Alaska Natives. (Baseline: 33 per 100,000 in 1987)

21.2k Increase to at least 70 percent the proportion of American Indians and Alaska Natives who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

	1985-1986 Baseline	*2000 Target*
American Indians and Alaska Natives	0.3%	0.6%

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

22.4 Develop and implement a national process to identify significant gaps in the Nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Objectives Targeting People with Disabilities

1.5b Reduce to no more than 20 percent the proportion of people with disabilities who engage in no leisure-time physical activity. (Baseline: 35 percent of people with disabilities aged 18 and older in 1985)

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

2.3e* Reduce overweight to a prevalence of no more than 25 percent among people with disabilities. (Baseline: 36 percent for people aged 20 through 74 who report any limitation in activity due to chronic conditions in 1985)

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

6.5a Reduce to less than 40 percent the proportion of people with disabilities aged 18 and older who experienced adverse health effects from stress within the past year. (Baseline: 53.5 percent in 1985)

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

9.11 Reduce the incidence of secondary disabilities associated with injuries of the head and spinal cord to no more than 16 and 2.6 per 100,000 people, respectively. (Baseline: 20 per 100,000 for serious head injuries and 3.2 per 100,000 for spinal cord injuries in 1986)

Note: Secondary disabilities are defined as those medical conditions secondary to traumatic head or spinal cord injury that impair independent and productive lifestyles.

9.22 Extend to 50 States emergency medical service and trauma systems linking prehospital, hospital, and rehabilitation services in order to prevent trauma deaths and long-term disability. (Baseline: 2 States in 1987)

14.15 Increase to at least 95 percent the proportion of newborns screened by State-sponsored programs for genetic disorders and other disabling conditions and to 90 percent the proportion of newborns testing positive for disease who receive appropriate treatment. (Baseline: For sickle cell anemia, with 20 States reporting, approximately 33 percent of live births screened (57 percent of black infants); for galactosemia, with 30 States reporting, approximately 70 percent of live births screened)

Note: As measured by the proportion of infants served by programs for sickle cell anemia and galactosemia. Screening programs should be appropriate for State demographic characteristics.

17.14 Increase to at least 40 percent the proportion of people with chronic and disabling conditions who receive formal patient education including information about community and self-help resources as an integral part of the management of their condition. (Baseline data available in 1991)

17.19 Increase to at least 75 percent the proportion of worksites with 50 or more employees that have a voluntarily established policy or program for the hiring of people with disabilities. (Baseline: 37 percent of medium and large companies in 1986)

Note: Voluntarily established policies and programs for the hiring of people with disabilities are encouraged for worksites of all sizes. This objective is limited to worksites with 50 or more employees for tracking purposes.

17.20 Increase to 50 the number of States that have service systems for children with or at risk of chronic and disabling conditions, as required by Public Law 101-239. (Baseline data available in 1991)

Note: Children with or at risk of chronic and disabling conditions, often referred to as children with special health care needs, include children with psychosocial as well as physical problems. This population encompasses children with a wide variety of actual or potential disabling conditions, including children with or at risk for cerebral palsy, mental retardation, sensory deprivation, developmental disabilities, spina bifida, hemophilia, other genetic disorders, and health-related educational and behavioral problems. Service systems for such children are organized networks of comprehensive, community-based, coordinated, and family-centered services.

21.21 Increase to at least 80 percent the proportion of people with disabilities who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

22.4 Develop and implement a national process to identify significant gaps in the nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

Appendices

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A. Summary List of Objectives

Duplicate objectives, which appear in two or more priority areas, are marked with an asterisk (*).

Except as otherwise noted, all rates in the following objectives are annual. Where the baseline rate is age adjusted, it is age adjusted to the 1940 U.S. population, and the target is age adjusted also. If a rate is age adjusted, the crude baseline rate may be found in Appendix D.

1. Physical Activity And Fitness

Health Status Objectives

1.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

		Special Population Target	
	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
1.1a	Blacks	163	115

1.2* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

		Special Population Targets	
	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
1.2a	Low-income women aged 20 and older	37%	25%
1.2b	Black women aged 20 and older	44%	30%
1.2c	Hispanic women aged 20 and older		25%
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
1.2d	American Indians/Alaska Natives	29-75%[§]	30%
1.2e	People with disabilities	36%[+]	25%
1.2f	Women with high blood pressure	50%	41%
1.2g	Men with high blood pressure	39%	35%

[†] *Baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes* [+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

Risk Reduction Objectives

1.3* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

1.4 Increase to at least 20 percent the proportion of people aged 18 and older and to at least 75 percent the proportion of children and adolescents aged 6 through 17 who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more days per week for 20 or more minutes per occasion. (Baseline: 12 percent for people aged 18 and older in 1985; 66 percent for youth aged 10 through 17 in 1984)

Special Population Target

	Vigorous Physical Activity	*1985 Baseline*	*2000 Target*
1.4a	Lower-income people aged 18 and older (annual family income <$20,000)	7%	12%

Note: Vigorous physical activities are rhythmic, repetitive physical activities that use large muscle groups at 60 percent or more of maximum heart rate for age. An exercise heart rate of 60 percent of maximum heart rate for age is about 50 percent of maximal cardiorespiratory capacity and is sufficient for cardiorespiratory conditioning. Maximum heart rate equals roughly 220 beats per minute minus age.

1.5 Reduce to no more than 15 percent the proportion of people aged 6 and older who engage in no leisure-time physical activity. (Baseline: 24 percent for people aged 18 and older in 1985)

Special Population Targets

	No Leisure-Time Physical Activity	*1985 Baseline*	*2000 Target*
1.5a	People aged 65 and older	43%	22%
1.5b	People with disabilities	35%†	20%
1.5c	Lower-income people (annual family income <$20,000)	32%†	17%

†*Baseline for people aged 18 and older*

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

1.6 Increase to at least 40 percent the proportion of people aged 6 and older who regularly perform physical activities that enhance and maintain muscular strength, muscular endurance, and flexibility. (Baseline data available in 1991)

1.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

Services and Protection Objectives

1.8 Increase to at least 50 percent the proportion of children and adolescents in 1st through 12th grade who participate in daily school physical education. (Baseline: 36 percent in 1984-86)

1.9 Increase to at least 50 percent the proportion of school physical education class time that students spend being physically active, preferably engaged in lifetime physical activities. (Baseline: Students spent an estimated 27 percent of class time being physically active in 1983)

Note: Lifetime activities are activities that may be readily carried into adulthood because they generally need only one or two people. Examples include swimming, bicycling, jogging, and racquet sports. Also counted as lifetime activities are vigorous social activities such as dancing. Competitive group sports and activities typically played only by young children such as group games are excluded.

1.10 Increase the proportion of worksites offering employer-sponsored physical activity and fitness programs as follows:

Worksite Size	*1985 Baseline*	*2000 Target*
50-99 employees	14%	20%
100-249 employees	23%	35%
250-749 employees	32%	50%
≥750 employees	54%	80%

1.11 Increase community availability and accessibility of physical activity and fitness facilities as follows:

Facility	*1986 Baseline*	*2000 Target*
Hiking, biking, and fitness trail miles	1 per 71,000 people	1 per 10,000 people
Public swimming pools	1 per 53,000 people	1 per 25,000 people
Acres of park and recreation open space	1.8 per 1,000 people (553 people per managed acre)	4 per 1,000 people (250 people per managed acre)

1.12 Increase to at least 50 percent the proportion of primary care providers who routinely assess and counsel their patients regarding the frequency, duration, type, and intensity of each patient's physical activity practices. (Baseline: Physicians provided exercise counseling for about 30 percent of sedentary patients in 1988)

2. Nutrition

Health Status Objectives

2.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
2.1a	Blacks	163	115

2.2* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

2.3* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

	Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
2.3a	Low-income women aged 20 and older	37%	25%
2.3b	Black women aged 20 and older	44%	30%
2.3c	Hispanic women aged 20 and older		25%
	Mexican-American women	39%[‡]	
	Cuban women	34%[‡]	
	Puerto Rican women	37%[‡]	
2.3d	American Indians/Alaska Natives	29-75%[§]	30%
2.3e	People with disabilities	36%[*]	25%
2.3f	Women with high blood pressure	50%	41%
2.3g	Men with high blood pressure	39%	35%

[†] *Baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes* [*] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

2.4 Reduce growth retardation among low-income children aged 5 and younger to less than 10 percent. (Baseline: Up to 16 percent among low-income children in 1988, depending on age and race/ethnicity)

Special Population Targets

	Prevalence of Short Stature	*1988 Baseline*	*2000 Target*
2.4a	Low-income black children <age 1	15%	10%
2.4b	Low-income Hispanic children <age 1	13%	10%
2.4c	Low-income Hispanic children aged 1	16%	10%
2.4d	Low-income Asian/Pacific Islander children aged 1	14%	10%
2.4e	Low-income Asian/Pacific Islander children aged 2-4	16%	10%

Note: Growth retardation is defined as height-for-age below the fifth percentile of children in the National Center for Health Statistics' reference population.

Risk Reduction Objectives

2.5* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

2.6* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of vegetables and fruits and 3 servings of grain products for women aged 19 through 50 in 1985)

2.7* Increase to at least 50 percent the proportion of overweight people aged 12 and older who have adopted sound dietary practices combined with regular physical activity to attain an appropriate body weight. (Baseline: 30 percent of overweight women and 25 percent of overweight men for people aged 18 and older in 1985)

2.8 Increase calcium intake so at least 50 percent of youth aged 12 through 24 and 50 percent of pregnant and lactating women consume 3 or more servings daily of foods rich in calcium, and at least 50 percent of people aged 25 and older consume 2 or more servings daily. (Baseline: 7 percent of women and 14 percent of men aged 19 though 24 and 24 percent of pregnant and lactating women consumed 3 or more servings, and 15 percent of women and 23 percent of men aged 25 through 50 consumed 2 or more servings in 1985-86)

Note: The number of servings of foods rich in calcium is based on milk and milk products. A serving is considered to be 1 cup of skim milk or its equivalent in calcium (302 mg). The number of servings in this objective will generally provide approximately three-fourths of the 1989 Recommended Dietary Allowance (RDA) of calcium. The RDA is 1200 mg for people aged 12 through 24, 800 mg for people aged 25 and older, and 1200 mg for pregnant and lactating women.

2.9 Decrease salt and sodium intake so at least 65 percent of home meal preparers prepare foods without adding salt, at least 80 percent of people avoid using salt at the table, and at least 40 percent of adults regularly purchase foods modified or lower in sodium. (Baseline: 54 percent of women aged 19 through 50 who served as the main meal preparer did not use salt in food preparation, and 68 percent of women aged 19 through 50 did not use salt at the table in 1985; 20 percent of all people aged 18 and older regularly purchased foods with reduced salt and sodium content in 1988)

2.10 Reduce iron deficiency to less than 3 percent among children aged 1 through 4 and among women of childbearing age. (Baseline: 9 percent for children aged 1 through 2, 4 percent for children aged 3 through 4, and 5 percent for women aged 20 through 44 in 1976-80)

Special Population Targets

	Iron Deficiency Prevalence	*1976-80 Baseline*	*2000 Target*
2.10a	Low-income children aged 1-2	21%	10%
2.10b	Low-income children aged 3-4	10%	5%
2.10c	Low-income women of childbearing age	8%[†]	4%
	Anemia Prevalence	*1983-85 Baseline*	*2000 Target*
2.10d	Alaska Native children aged 1-5	22-28%	10%
2.10e	Black, low-income pregnant women (third trimester)	41%[‡]	20%

[†] *Baseline for women aged 20-44* [‡] *1988 baseline for women aged 15-44*

Note: Iron deficiency is defined as having abnormal results for 2 or more of the following tests: mean corpuscular volume, erythrocyte protoporphyrin, and transferrin saturation. Anemia is used as an index of iron deficiency. Anemia among Alaska Native children was defined as hemoglobin <11 gm/dL or hematocrit <34 percent. For pregnant women in the third trimester, anemia was defined according to CDC criteria. The above prevalences of iron deficiency and anemia may be due to inadequate dietary iron intakes or to inflammatory conditions and infections. For anemia, genetics may also be a factor.

2.11* Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*
	During Early Postpartum Period—		
2.11a	Low-income mothers	32%	75%
2.11b	Black mothers	25%	75%
2.11c	Hispanic mothers	51%	75%
2.11d	American Indian/Alaska Native mothers	47%	75%
	At Age 5-6 Months—		
2.11a	Low-income mothers	9%	50%
2.11b	Black mothers	8%	50%
2.11c	Hispanic mothers	16%	50%
2.11d	American Indian/Alaska Native mothers	28%	50%

2.12* Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

Special Population Targets

	Appropriate Feeding Practices	*Baseline*	*2000 Target*
2.12a	Parents and caregivers with less than high school education	—	65%
2.12b	American Indian/Alaska Native parents and caregivers	—	65%

2.13 Increase to at least 85 percent the proportion of people aged 18 and older who use food labels to make nutritious food selections. (Baseline: 74 percent used labels to make food selections in 1988)

Services and Protection Objectives

2.14 Achieve useful and informative nutrition labeling for virtually all processed foods and at least 40 percent of fresh meats, poultry, fish, fruits, vegetables, baked goods, and ready-to-eat carry-away foods. (Baseline: 60 percent of sales of processed foods regulated by FDA had nutrition labeling in 1988; baseline data on fresh and carry-away foods unavailable)

2.15 Increase to at least 5,000 brand items the availability of processed food products that are reduced in fat and saturated fat. (Baseline: 2,500 items reduced in fat in 1986)

Note: A brand item is defined as a particular flavor and/or size of a specific brand and is typically the consumer unit of purchase.

2.16 Increase to at least 90 percent the proportion of restaurants and institutional food service operations that offer identifiable low-fat, low-calorie food choices, consistent with the *Dietary Guidelines for Americans*. (Baseline: About 70 percent of fast food and family restaurant chains with 350 or more units had at least one low-fat, low-calorie item on their menu in 1989)

2.17 Increase to at least 90 percent the proportion of school lunch and breakfast services and child care food services with menus that are consistent with the nutrition principles in the *Dietary Guidelines for Americans*. (Baseline data available in 1993)

2.18 Increase to at least 80 percent the receipt of home food services by people aged 65 and older who have difficulty in preparing their own meals or are otherwise in need of home-delivered meals. (Baseline data available in 1991)

2.19 Increase to at least 75 percent the proportion of the Nation's schools that provide nutrition education from preschool through 12th grade, preferably as part of quality school health education. (Baseline data available in 1991)

2.20 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer nutrition education and/or weight management programs for employees. (Baseline: 17 percent offered nutrition education activities and 15 percent offered weight control activities in 1985)

2.21 Increase to at least 75 percent the proportion of primary care providers who provide nutrition assessment and counseling and/or referral to qualified nutritionists or dietitians. (Baseline: Physicians provided diet counseling for an estimated 40 to 50 percent of patients in 1988)

3. Tobacco

Health Status Objectives

3.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
3.1a	Blacks	163	115

3.2* Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

3.3 Slow the rise in deaths from chronic obstructive pulmonary disease to achieve a rate of no more than 25 per 100,000 people. (Age-adjusted baseline: 18.7 per 100,000 in 1987)

Note: Deaths from chronic obstructive pulmonary disease include deaths due to chronic bronchitis, emphysema, asthma, and other chronic obstructive pulmonary diseases and allied conditions.

Risk Reduction Objectives

3.4* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
3.4a	People with a high school education or less aged 20 and older	34%	20%
3.4b	Blue-collar workers aged 20 and older	36%	20%
3.4c	Military personnel	42%[†]	20%
3.4d	Blacks aged 20 and older	34%	18%
3.4e	Hispanics aged 20 and older	33%[‡]	18%
3.4f	American Indians/Alaska Natives	42-70%[§]	20%
3.4g	Southeast Asian men	55%[*]	20%
3.4h	Women of reproductive age	29%[††]	12%
3.4i	Pregnant women	25%[‡‡]	10%
3.4j	Women who use oral contraceptives	36%[§§]	10%

[†] *1988 baseline* [‡] *1982-84 baseline for Hispanics aged 20-74* [§] *1979-87 estimates for different tribes*
[*] *1984-88 baseline* [††] *Baseline for women aged 18-44* [‡‡] *1985 baseline* [§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

3.5 Reduce the initiation of cigarette smoking by children and youth so that no more than 15 percent have become regular cigarette smokers by age 20. (Baseline: 30 percent of youth had become regular cigarette smokers by ages 20 through 24 in 1987)

Special Population Target

	Initiation of Smoking	*1987 Baseline*	*2000 Target*
3.5a	Lower socioeconomic status youth[†]	40%	18%

[†] *As measured by people aged 20-24 with a high school education or less*

3.6 Increase to at least 50 percent the proportion of cigarette smokers aged 18 and older who stopped smoking cigarettes for at least one day during the preceding year. (Baseline: In 1986, 34 percent of people who smoked in the preceding year stopped for at least one day during that year)

3.7 Increase smoking cessation during pregnancy so that at least 60 percent of women who are cigarette smokers at the time they become pregnant quit smoking early in pregnancy and maintain abstinence for the remainder of their pregnancy. (Baseline: 39 percent of white women aged 20 through 44 quit at any time during pregnancy in 1985)

Special Population Target

	Cessation and Abstinence During Pregnancy	*1985 Baseline*	*2000 Target*
3.7a	Women with less than a high school education	28%[†]	45%

[†] *Baseline for white women aged 20-44*

3.8 Reduce to no more than 20 percent the proportion of children aged 6 and younger who are regularly exposed to tobacco smoke at home. (Baseline: More than 39 percent in 1986, as 39 percent of households with one or more children aged 6 or younger had a cigarette smoker in the household)

Note: Regular exposure to tobacco smoke at home is defined as the occurrence of tobacco smoking anywhere in the home on more than 3 days each week.

3.9 Reduce smokeless tobacco use by males aged 12 through 24 to a prevalence of no more than 4 percent. (Baseline: 6.6 percent among males aged 12 through 17 in 1988; 8.9 percent among males aged 18 through 24 in 1987)

Special Population Target

	Smokeless Tobacco Use	*1986-87 Baseline*	*2000 Target*
3.9a	American Indian/Alaska Native youth	18-64%	10%

Note: For males aged 12 through 17, a smokeless tobacco user is someone who has used snuff or chewing tobacco in the preceding month. For males aged 18 through 24, a smokeless tobacco user is someone who has used either snuff or chewing tobacco at least 20 times and who currently uses snuff or chewing tobacco.

Services and Protection Objectives

3.10 Establish tobacco-free environments and include tobacco use prevention in the curricula of all elementary, middle, and secondary schools, preferably as part of quality school health education. (Baseline: 17 percent of school districts totally banned smoking on school premises or at school functions in 1988; antismoking education was provided by 78 percent of school districts at the high school level, 81 percent at the middle school level, and 75 percent at the elementary school level in 1988)

3.11 Increase to at least 75 percent the proportion of worksites with a formal smoking policy that prohibits or severely restricts smoking at the workplace. (Baseline: 27 percent of worksites with 50 or more employees in 1985; 54 percent of medium and large companies in 1987)

3.12 Enact in 50 States comprehensive laws on clean indoor air that prohibit or strictly limit smoking in the workplace and enclosed public places (including health care facilities, schools, and public transportation). (Baseline: 42 States and the District of Columbia had laws restricting smoking in public places; 31 States restricted smoking in public workplaces; but only 13 States had comprehensive laws regulating smoking in private as well as public worksites and at least 4 public places, including restaurants, as of 1988)

3.13 Enact and enforce in 50 States laws prohibiting the sale and distribution of tobacco products to youth younger than age 19. (Baseline: 44 States and the District of Columbia had, but rarely enforced, laws regulating the sale and/or distribution of cigarettes or tobacco products to minors in 1990; only 3 set the age of majority at 19 and only 6 prohibited cigarette vending machines accessible to minors)

Note: Model legislation proposed by DHHS recommends licensure of tobacco vendors, civil money penalties and license suspension or revocation for violations, and a ban on cigarette vending machines.

3.14 Increase to 50 the number of States with plans to reduce tobacco use, especially among youth. (Baseline: 12 States in 1989)

3.15 Eliminate or severely restrict all forms of tobacco product advertising and promotion to which youth younger than age 18 are likely to be exposed. (Baseline: Radio and television advertising of tobacco products were prohibited, but other restrictions on advertising and promotion to which youth may be exposed were minimal in 1990)

3.16 Increase to at least 75 percent the proportion of primary care and oral health care providers who routinely advise cessation and provide assistance and followup for all of their tobacco-using patients. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986; about 35 percent of dentists reported counseling at least 75 percent of their smoking patients about smoking in 1986)

4. Alcohol and Other Drugs

Health Status Objectives

4.1 Reduce deaths caused by alcohol-related motor vehicle crashes to no more than 8.5 per 100,000 people. (Age-adjusted baseline: 9.8 per 100,000 in 1987)

Special Population Targets

	Alcohol-Related Motor Vehicle Crash Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
4.1a	American Indian/Alaska Native men	52.2	44.8
4.1b	People aged 15-24	21.5	18

4.2 Reduce cirrhosis deaths to no more than 6 per 100,000 people. (Age-adjusted baseline: 9.1 per 100,000 in 1987)

Special Population Targets

	Cirrhosis Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
4.2a	Black men	22	12
4.2b	American Indians/Alaska Natives	25.9	13

4.3 Reduce drug-related deaths to no more than 3 per 100,000 people. (Age-adjusted baseline: 3.8 per 100,000 in 1987)

4.4 Reduce drug abuse-related hospital emergency department visits by at least 20 percent. (Baseline data available in 1991)

Risk Reduction Objectives

4.5 Increase by at least 1 year the average age of first use of cigarettes, alcohol, and marijuana by adolescents aged 12 through 17. (Baseline: Age 11.6 for cigarettes, age 13.1 for alcohol, and age 13.4 for marijuana in 1988)

4.6 Reduce the proportion of young people who have used alcohol, marijuana, and cocaine in the past month, as follows:

Substance/Age	*1988 Baseline*	*2000 Target*
Alcohol/aged 12-17	25.2%	12.6%
Alcohol/aged 18-20	57.9%	29%
Marijuana/aged 12-17	6.4%	3.2%
Marijuana/aged 18-25	15.5%	7.8%
Cocaine/aged 12-17	1.1%	0.6%
Cocaine/aged 18-25	4.5%	2.3%

Note: The targets of this objective are consistent with the goals established by the Office of National Drug Control Policy, Executive Office of the President.

4.7 Reduce the proportion of high school seniors and college students engaging in recent occasions of heavy drinking of alcoholic beverages to no more than 28 percent of high school seniors and 32 percent of college students. (Baseline: 33 percent of high school seniors and 41.7 percent of college students in 1989)

Note: Recent heavy drinking is defined as having 5 or more drinks on one occasion in the previous 2-week period as monitored by self-reports.

4.8 Reduce alcohol consumption by people aged 14 and older to an annual average of no more than 2 gallons of ethanol per person. (Baseline: 2.54 gallons of ethanol in 1987)

4.9 Increase the proportion of high school seniors who perceive social disapproval associated with the heavy use of alcohol, occasional use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	56.4%	70%
Occasional use of marijuana	71.1%	85%
Trying cocaine once or twice	88.9%	95%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.10 Increase the proportion of high school seniors who associate risk of physical or psychological harm with the heavy use of alcohol, regular use of marijuana, and experimentation with cocaine, as follows:

Behavior	*1989 Baseline*	*2000 Target*
Heavy use of alcohol	44%	70%
Regular use of marijuana	77.5%	90%
Trying cocaine once or twice	54.9%	80%

Note: Heavy drinking is defined as having 5 or more drinks once or twice each weekend.

4.11 Reduce to no more than 3 percent the proportion of male high school seniors who use anabolic steroids. (Baseline: 4.7 percent in 1989)

Services and Protection Objectives

4.12 Establish and monitor in 50 States comprehensive plans to ensure access to alcohol and drug treatment programs for traditionally underserved people. (Baseline data available in 1991)

4.13 Provide to children in all school districts and private schools primary and secondary school educational programs on alcohol and other drugs, preferably as part of quality school health education. (Baseline: 63 percent provided some instruction, 39 percent provided counseling, and 23 percent referred students for clinical assessments in 1987)

4.14 Extend adoption of alcohol and drug policies for the work environment to at least 60 percent of worksites with 50 or more employees. (Baseline data available in 1991)

4.15 Extend to 50 States administrative driver's license suspension/revocation laws or programs of equal effectiveness for people determined to have been driving under the influence of intoxicants. (Baseline: 28 States and the District of Columbia in 1990)

4.16 Increase to 50 the number of States that have enacted and enforce policies, beyond those in existence in 1989, to reduce access to alcoholic beverages by minors.

Note: Policies to reduce access to alcoholic beverages by minors may include those that address restriction of the sale of alcoholic beverages at recreational and entertainment events at which youth make up a majority of participants/consumers, product pricing, penalties and license-revocation for sale of alcoholic beverages to minors, and other approaches designed to discourage and restrict purchase of alcoholic beverages by minors.

4.17 Increase to at least 20 the number of States that have enacted statutes to restrict promotion of alcoholic beverages that is focused principally on young audiences. (Baseline data available in 1992)

4.18 Extend to 50 States legal blood alcohol concentration tolerance levels of .04 percent for motor vehicle drivers aged 21 and older and .00 percent for those younger than age 21. (Baseline: 0 States in 1990)

4.19 Increase to at least 75 percent the proportion of primary care providers who screen for alcohol and other drug use problems and provide counseling and referral as needed. (Baseline data available in 1992)

5. Family Planning

Health Status Objectives

5.1 Reduce pregnancies among girls aged 17 and younger to no more than 50 per 1,000 adolescents. (Baseline: 71.1 pregnancies per 1,000 girls aged 15 through 17 in 1985)

Special Population Targets

	Pregnancies (per 1,000)	*1985 Baseline*	*2000 Target*
5.1a	Black adolescent girls aged 15-19	186[†]	120
5.1b	Hispanic adolescent girls aged 15-19	158	105

[†] *Non-white adolescents*

Note: For black and Hispanic adolescent girls, baseline data are unavailable for those aged 15 through 17. The targets for these two populations are based on data for women aged 15 through 19. If more complete data become available, a 35-percent reduction from baseline figures should be used as the target.

5.2 Reduce to no more than 30 percent the proportion of all pregnancies that are unintended. (Baseline: 56 percent of pregnancies in the previous 5 years were unintended, either unwanted or earlier than desired, in 1988)

Special Population Target

	Unintended Pregnancies	*1988 Baseline*	*2000 Target*
5.2a	Black women	78%	40%

5.3 Reduce the prevalence of infertility to no more than 6.5 percent. (Baseline: 7.9 percent of married couples with wives aged 15 through 44 in 1988)

Special Population Targets

	Prevalence of Infertility	*1988 Baseline*	*2000 Target*
5.3a	Black couples	12.1%	9%
5.3b	Hispanic couples	12.4%	9%

Note: Infertility is the failure of couples to conceive after 12 months of intercourse without contraception.

Risk Reduction Objectives

5.4* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

5.5 Increase to at least 40 percent the proportion of ever sexually active adolescents aged 17 and younger who have abstained from sexual activity for the previous 3 months. (Baseline: 26 percent of sexually active girls aged 15 through 17 in 1988)

5.6 Increase to at least 90 percent the proportion of sexually active, unmarried people aged 19 and younger who use contraception, especially combined method contraception that both effectively prevents pregnancy and provides barrier protection against disease. (Baseline: 78 percent at most recent intercourse and 63 percent at first intercourse; 2 percent used oral contraceptives and the condom at most recent intercourse; among young women aged 15 through 19 reporting in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

5.7 Increase the effectiveness with which family planning methods are used, as measured by a decrease to no more than 5 percent in the proportion of couples experiencing pregnancy despite use of a contraceptive method. (Baseline: Approximately 10 percent of women using reversible contraceptive methods experienced an unintended pregnancy in 1982)

Services and Protection Objectives

5.8 Increase to at least 85 percent the proportion of people aged 10 through 18 who have discussed human sexuality, including values surrounding sexuality, with their parents and/or have received information through another parentally endorsed source, such as youth, school, or religious programs. (Baseline: 66 percent of people aged 13 through 18 have discussed sexuality with their parents; reported in 1986)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

5.9 Increase to at least 90 percent the proportion of pregnancy counselors who offer positive, accurate information about adoption to their unmarried patients with unintended pregnancies. (Baseline: 60 percent of pregnancy counselors in 1984)

Note: Pregnancy counselors are any providers of health or social services who discuss the management or outcome of pregnancy with a woman after she has received a diagnosis of pregnancy.

5.10* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

5.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

6. Mental Health and Mental Disorders

Health Status Objectives

6.1* Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*
6.1a	Youth aged 15-19	10.3	8.2
6.1b	Men aged 20-34	25.2	21.4
6.1c	White men aged 65 and older	46.1	39.2
6.1d	American Indian/Alaska Native men in Reservation States	15	12.8

6.2* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

6.3 Reduce to less than 10 percent the prevalence of mental disorders among children and adolescents. (Baseline: An estimated 12 percent among youth younger than age 18 in 1989)

6.4 Reduce the prevalence of mental disorders (exclusive of substance abuse) among adults living in the community to less than 10.7 percent. (Baseline: One-month point prevalence of 12.6 percent in 1984)

6.5 Reduce to less than 35 percent the proportion of people aged 18 and older who experienced adverse health effects from stress within the past year. (Baseline: 42.6 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*
6.5a	People with disabilities	53.5%	40%

Note: For this objective, people with disabilities are people who report any limitation in activity due to chronic conditions.

Risk Reduction Objectives

6.6 Increase to at least 30 percent the proportion of people aged 18 and older with severe, persistent mental disorders who use community support programs. (Baseline: 15 percent in 1986)

6.7 Increase to at least 45 percent the proportion of people with major depressive disorders who obtain treatment. (Baseline: 31 percent in 1982)

6.8 Increase to at least 20 percent the proportion of people aged 18 and older who seek help in coping with personal and emotional problems. (Baseline: 11.1 percent in 1985)

Special Population Target

		1985 Baseline	*2000 Target*
6.8a	People with disabilities	14.7%	30%

6.9 Decrease to no more than 5 percent the proportion of people aged 18 and older who report experiencing significant levels of stress who do not take steps to reduce or control their stress. (Baseline: 21 percent in 1985)

Services and Protection Objectives

6.10* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

6.11 Increase to at least 40 percent the proportion of worksites employing 50 or more people that provide programs to reduce employee stress. (Baseline: 26.6 percent in 1985)

6.12 Establish mutual help clearinghouses in at least 25 States. (Baseline: 9 States in 1989)

6.13 Increase to at least 50 percent the proportion of primary care providers who routinely review with patients their patients' cognitive, emotional, and behavioral functioning and the resources available to deal with any problems that are identified. (Baseline data available in 1992)

6.14 Increase to at least 75 percent the proportion of providers of primary care for children who include assessment of cognitive, emotional, and parent-child functioning, with appropriate counseling, referral, and followup, in their clinical practices. (Baseline data available in 1992)

7. Violent and Abusive Behavior

Health Status Objectives

7.1 Reduce homicides to no more than 7.2 per 100,000 people. (Age-adjusted baseline: 8.5 per 100,000 in 1987)

Special Population Targets

	Homicide Rate (per 100,000)	*1987 Baseline*	*2000 Target*
7.1a	Children aged 3 and younger	3.9	3.1
7.1b	Spouses aged 15-34	1.7	1.4
7.1c	Black men aged 15-34	90.5	72.4
7.1d	Hispanic men aged 15-34	53.1	42.5
7.1e	Black women aged 15-34	20.0	16.0
7.1f	American Indians/Alaska Natives in Reservation States	14.1	11.3

7.2* Reduce suicides to no more than 10.5 per 100,000 people. (Age-adjusted baseline: 11.7 per 100,000 in 1987)

Special Population Targets

	Suicides (per 100,000)	*1987 Baseline*	*2000 Target*
7.2a	Youth aged 15-19	10.3	8.2
7.2b	Men aged 20-34	25.2	21.4
7.2c	White men aged 65 and older	46.1	39.2
7.2d	American Indian/Alaska Native men in Reservation States	15	12.8

7.3 Reduce weapon-related violent deaths to no more than 12.6 per 100,000 people from major causes. (Age-adjusted baseline: 12.9 per 100,000 by firearms, 1.9 per 100,000 by knives, in 1987)

7.4 Reverse to less than 25.2 per 1,000 children the rising incidence of maltreatment of children younger than age 18. (Baseline: 25.2 per 1,000 in 1986)

Type-Specific Targets

	Incidence of Types of Maltreatment (per 1,000)	*1986 Baseline*	*2000 Target*
7.4a	Physical abuse	5.7	<5.7
7.4b	Sexual abuse	2.5	<2.5
7.4c	Emotional abuse	3.4	<3.4
7.4d	Neglect	15.9	<15.9

7.5 Reduce physical abuse directed at women by male partners to no more than 27 per 1,000 couples. (Baseline: 30 per 1,000 in 1985)

7.6 Reduce assault injuries among people aged 12 and older to no more than 10 per 1,000 people. (Baseline: 11.1 per 1,000 in 1986)

7.7 Reduce rape and attempted rape of women aged 12 and older to no more than 108 per 100,000 women. (Baseline: 120 per 100,000 in 1986)

Special Population Target

	Incidence of Rape and Attempted Rape (per 100,000)	*1986 Baseline*	*2000 Target*
7.7a	Women aged 12-34	250	225

7.8* Reduce by 15 percent the incidence of injurious suicide attempts among adolescents aged 14 through 17. (Baseline data available in 1991)

Risk Reduction Objectives

7.9 Reduce by 20 percent the incidence of physical fighting among adolescents aged 14 through 17. (Baseline data available in 1991)

7.10 Reduce by 20 percent the incidence of weapon-carrying by adolescents aged 14 through 17. (Baseline data available in 1991)

7.11 Reduce by 20 percent the proportion of people who possess weapons that are inappropriately stored and therefore dangerously available. (Baseline data available in 1992)

Services and Protection Objectives

7.12 Extend protocols for routinely identifying, treating, and properly referring suicide attempters, victims of sexual assault, and victims of spouse, elder, and child abuse to at least 90 percent of hospital emergency departments. (Baseline data available in 1992)

7.13 Extend to at least 45 States implementation of unexplained child death review systems. (Baseline data available in 1991)

7.14 Increase to at least 30 the number of States in which at least 50 percent of children identified as neglected or physically or sexually abused receive physical and mental evaluation with appropriate followup as a means of breaking the intergenerational cycle of abuse. (Baseline data available in 1993)

7.15 Reduce to less than 10 percent the proportion of battered women and their children turned away from emergency housing due to lack of space. (Baseline: 40 percent in 1987)

7.16 Increase to at least 50 percent the proportion of elementary and secondary schools that teach nonviolent conflict resolution skills, preferably as a part of quality school health education. (Baseline data available in 1991)

7.17 Extend coordinated, comprehensive violence prevention programs to at least 80 percent of local jurisdictions with populations over 100,000. (Baseline data available in 1993)

7.18* Increase to 50 the number of States with officially established protocols that engage mental health, alcohol and drug, and public health authorities with corrections authorities to facilitate identification and appropriate intervention to prevent suicide by jail inmates. (Baseline data available in 1992)

8. Educational and Community-Based Programs

Health Status Objective

8.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
8.1a	Blacks	56	60
8.1b	Hispanics	62	65
8.1c	People aged 65 and older	12[†]	14[†]

[†] *Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Risk Reduction Objective

8.2 Increase the high school graduation rate to at least 90 percent, thereby reducing risks for multiple problem behaviors and poor mental and physical health. (Baseline: 79 percent of people aged 20 through 21 had graduated from high school with a regular diploma in 1989)

Note: This objective and its target are consistent with the National Education Goal to increase high school graduation rates. The baseline estimate is a proxy. When a measure is chosen to monitor the National Education Goal, the same measure and data source will be used to track this objective.

Services and Protection Objectives

8.3 Achieve for all disadvantaged children and children with disabilities access to high quality and developmentally appropriate preschool programs that help prepare children for school, thereby improving their prospects with regard to school performance, problem behaviors, and mental and physical health. (Baseline: 47 percent of eligible children aged 4 were afforded the opportunity to enroll in Head Start in 1990)

Note: This objective and its target are consistent with the National Education Goal to increase school readiness and its objective to increase access to preschool programs for disadvantaged and disabled children. The baseline estimate is an available, but partial, proxy. When a measure is chosen to monitor this National Education Objective, the same measure and data source will be used to track this objective.

8.4 Increase to at least 75 percent the proportion of the Nation's elementary and secondary schools that provide planned and sequential kindergarten through 12th grade quality school health education. (Baseline data available in 1991)

8.5 Increase to at least 50 percent the proportion of postsecondary institutions with institutionwide health promotion programs for students, faculty, and staff. (Baseline: At least 20 percent of higher education institutions offered health promotion activities for students in 1989-90)

8.6 Increase to at least 85 percent the proportion of workplaces with 50 or more employees that offer health promotion activities for their employees, preferably as part of a comprehensive employee health promotion program. (Baseline: 65 percent of worksites with 50 or more employees offered at least one health promotion activity in 1985; 63 percent of medium and large companies had a wellness program in 1987)

8.7 Increase to at least 20 percent the proportion of hourly workers who participate regularly in employer-sponsored health promotion activities. (Baseline data available in 1992)

8.8 Increase to at least 90 percent the proportion of people aged 65 and older who had the opportunity to participate during the preceding year in at least one organized health promotion program through a senior center, lifecare facility, or other community-based setting that serves older adults. (Baseline data available in 1992)

8.9 Increase to at least 75 percent the proportion of people aged 10 and older who have discussed issues related to nutrition, physical activity, sexual behavior, tobacco, alcohol, other drugs, or safety with family members on at least one occasion during the preceding month. (Baseline data available in 1991)

Note: This objective, which supports family communication on a range of vital personal health issues, will be tracked using the National Health Interview Survey, a continuing, voluntary, national sample survey of adults who report on household characteristics including such items as illnesses, injuries, use of health services, and demographic characteristics.

8.10 Establish community health promotion programs that separately or together address at least three of the Healthy People 2000 priorities and reach at least 40 percent of each State's population. (Baseline data available in 1992)

8.11 Increase to at least 50 percent the proportion of counties that have established culturally and linguistically appropriate community health promotion programs for racial and ethnic minority populations. (Baseline data available in 1992)

Note: This objective will be tracked in counties in which a racial or ethnic group constitutes more than 10 percent of the population.

8.12 Increase to at least 90 percent the proportion of hospitals, health maintenance organizations, and large group practices that provide patient education programs, and to at least 90 percent the proportion of community hospitals that offer community health promotion programs addressing the priority health needs of their communities. (Baseline: 66 percent of 6,821 registered hospitals provided patient education services in 1987; 60 percent of 5,677 community hospitals offered community health promotion programs in 1987)

8.13 Increase to at least 75 percent the proportion of local television network affiliates in the top 20 television markets that have become partners with one or more community organizations around one of the health problems addressed by the Healthy People 2000 objectives. (Baseline data available in 1991)

8.14 Increase to at least 90 percent the proportion of people who are served by a local health department that is effectively carrying out the core functions of public health. (Baseline data available in 1992)

Note: The core functions of public health have been defined as assessment, policy development, and assurance. Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

9. Unintentional Injuries

Health Status Objectives

9.1 Reduce deaths caused by unintentional injuries to no more than 29.3 per 100,000 people. (Age-adjusted baseline: 34.5 per 100,000 in 1987)

Special Population Targets

	Deaths Caused By Unintential Injuries (per 100,000)	*1987 Baseline*	*2000 Target*
9.1a	American Indians/Alaska Natives	82.6	66.1
9.1b	Black males	64.9	51.9
9.1c	White males	53.6	42.9

9.2 Reduce nonfatal unintentional injuries so that hospitalizations for this condition are no more than 754 per 100,000 people. (Baseline: 887 per 100,000 in 1988)

9.3 Reduce deaths caused by motor vehicle crashes to no more than 1.9 per 100 million vehicle miles traveled and 16.8 per 100,000 people. (Baseline: 2.4 per 100 million vehicle miles traveled (VMT) and 18.8 per 100,000 people (age adjusted) in 1987)

Special Population Targets

	Deaths Caused By Motor Vehicle Crashes (per 100,000)	*1987 Baseline*	*2000 Target*
9.3a	Children aged 14 and younger	6.2	5.5
9.3b	Youth aged 15-24	36.9	33
9.3c	People aged 70 and older	22.6	20
9.3d	American Indians/Alaska Natives	46.8	39.2

Type-Specific Targets

	Deaths Caused By Motor Vehicle Crashes	*1987 Baseline*	*2000 Target*
9.3e	Motorcyclists	40.9/100 million VMT & 1.7/100,000	33/100 million VMT & 1.5/100,000
9.3f	Pedestrians	3.1/100,000	2.7/100,000

9.4 Reduce deaths from falls and fall-related injuries to no more than 2.3 per 100,000 people. (Age-adjusted baseline: 2.7 per 100,000 in 1987)

Special Population Targets

	Deaths From Falls and Fall-Related Injuries (per 100,000)	*1987 Baseline*	*2000 Target*
9.4a	People aged 65-84	18	14.4
9.4b	People aged 85 and older	131.2	105.0
9.4c	Black men aged 30-69	8	5.6

9.5 Reduce drowning deaths to no more than 1.3 per 100,000 people. (Age-adjusted baseline: 2.1 per 100,000 in 1987)

Special Population Targets

	Drowning Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
9.5a	Children aged 4 and younger	4.2	2.3
9.5b	Men aged 15-34	4.5	2.5
9.5c	Black males	6.6	3.6

9.6 Reduce residential fire deaths to no more than 1.2 per 100,000 people. (Age-adjusted baseline: 1.5 per 100,000 in 1987)

Special Population Targets

	Residential Fire Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
9.6a	Children aged 4 and younger	4.4	3.3
9.6b	People aged 65 and older	4.4	3.3
9.6c	Black males	5.7	4.3
9.6d	Black females	3.4	2.6

Type-Specific Target

		1983 Baseline	*2000 Target*
9.6e	Residential fire deaths caused by smoking	17%	5%

9.7 Reduce hip fractures among people aged 65 and older so that hospitalizations for this condition are no more than 607 per 100,000. (Baseline: 714 per 100,000 in 1988)

Special Population Target

	Hip Fractures (per 100,000)	*1988 Baseline*	*2000 Target*
9.7a	White women aged 85 and older	2,721	2,177

9.8 Reduce nonfatal poisoning to no more than 88 emergency department treatments per 100,000 people. (Baseline: 103 per 100,000 in 1986)

Special Population Target

	Nonfatal Poisoning (per 100,000)	*1986 Baseline*	*2000 Target*
9.8a	Among children aged 4 and younger	650	520

9.9 Reduce nonfatal head injuries so that hospitalizations for this condition are no more than 106 per 100,000 people. (Baseline: 125 per 100,000 in 1988)

9.10 Reduce nonfatal spinal cord injuries so that hospitalizations for this condition are no more than 5 per 100,000 people. (Baseline: 5.9 per 100,000 in 1988)

Special Population Target

	Nonfatal Spinal Cord Injuries (per 100,000)	*1988 Baseline*	*2000 Target*
9.10a	Males	8.9	7.1

9.11 Reduce the incidence of secondary disabilities associated with injuries of the head and spinal cord to no more than 16 and 2.6 per 100,000 people, respectively. (Baseline: 20 per 100,000 for serious head injuries and 3.2 per 100,000 for spinal cord injuries in 1986)

Note: Secondary disabilities are defined as those medical conditions secondary to traumatic head or spinal cord injury that impair independent and productive lifestyles.

Risk Reduction Objectives

9.12 Increase use of occupant protection systems, such as safety belts, inflatable safety restraints, and child safety seats, to at least 85 percent of motor vehicle occupants. (Baseline: 42 percent in 1988)

Special Population Target

	Use of Occupant Protection Systems	*1988 Baseline*	*2000 Target*
9.12a	Children aged 4 and younger	84%	95%

9.13 Increase use of helmets to at least 80 percent of motorcyclists and at least 50 percent of bicyclists. (Baseline: 60 percent of motorcyclists in 1988 and an estimated 8 percent of bicyclists in 1984)

Services and Protection Objectives

9.14 Extend to 50 States laws requiring safety belt and motorcycle helmet use for all ages. (Baseline: 33 States and the District of Columbia in 1989 for automobiles; 22 States, the District of Columbia, and Puerto Rico for motorcycles)

9.15 Enact in 50 States laws requiring that new handguns be designed to minimize the likelihood of discharge by children. (Baseline: 0 States in 1989)

9.16 Extend to 2,000 local jurisdictions the number whose codes address the installation of fire suppression sprinkler systems in those residences at highest risk for fires. (Baseline data available in 1991)

9.17 Increase the presence of functional smoke detectors to at least one on each habitable floor of all inhabited residential dwellings. (Baseline: 81 percent of residential dwellings in 1989)

9.18 Provide academic instruction on injury prevention and control, preferably as part of quality school health education, in at least 50 percent of public school systems (grades K through 12). (Baseline data available in 1991)

9.19* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

9.20 Increase to at least 30 the number of States that have design standards for signs, signals, markings, lighting, and other characteristics of the roadway environment to improve the visual stimuli and protect the safety of older drivers and pedestrians. (Baseline data available in 1992)

9.21 Increase to at least 50 percent the proportion of primary care providers who routinely provide age-appropriate counseling on safety precautions to prevent unintentional injury. (Baseline data available in 1992)

9.22 Extend to 50 States emergency medical services and trauma systems linking prehospital, hospital, and rehabilitation services in order to prevent trauma deaths and long-term disability. (Baseline: 2 States in 1987)

10. Occupational Safety and Health

Health Status Objectives

10.1 Reduce deaths from work-related injuries to no more than 4 per 100,000 full-time workers. (Baseline: Average of 6 per 100,000 during 1983-87)

Special Population Targets

	Work-Related Deaths (per 100,000)	*1983-87 Average*	*2000 Target*
10.1a	Mine workers	30.3	21
10.1b	Construction workers	25.0	17
10.1c	Transportation workers	15.2	10
10.1d	Farm workers	14.0	9.5

10.2 Reduce work-related injuries resulting in medical treatment, lost time from work, or restricted work activity to no more than 6 cases per 100 full-time workers. (Baseline: 7.7 per 100 in 1987)

		Special Population Targets	
	Work-Related Injuries (per 100)	*1983-87 Average*	*2000 Target*
10.2a	Construction workers	14.9	10
10.2b	Nursing and personal care workers	12.7	9
10.2c	Farm workers	12.4	8
10.2d	Transportation workers	8.3	6
10.2e	Mine workers	8.3	6

10.3 Reduce cumulative trauma disorders to an incidence of no more than 60 cases per 100,000 full-time workers. (Baseline: 100 per 100,000 in 1987)

		Special Population Targets	
	Cumulative Trauma Disorders (per 100,000)	*1987 Baseline*	*2000 Target*
10.3a	Manufacturing industry workers	355	150
10.3b	Meat product workers	3,920	2,000

10.4 Reduce occupational skin disorders or diseases to an incidence of no more than 55 per 100,000 full-time workers. (Baseline: Average of 64 per 100,000 during 1983-87)

10.5* Reduce hepatitis B infections among occupationally exposed workers to an incidence of no more than 1,250 cases. (Baseline: An estimated 6,200 cases in 1987)

Risk Reduction Objectives

10.6 Increase to at least 75 percent the proportion of worksites with 50 or more employees that mandate employee use of occupant protection systems, such as seatbelts, during all work-related motor vehicle travel. (Baseline data available in 1991)

10.7 Reduce to no more than 15 percent the proportion of workers exposed to average daily noise levels that exceed 85 dBA. (Baseline data available in 1992)

10.8 Eliminate exposures which result in workers having blood lead concentrations greater than 25 µg/dL of whole blood. (Baseline: 4,804 workers with blood lead levels above 25 µg/dL in 7 States in 1988)

10.9* Increase hepatitis B immunization levels to 90 percent among occupationally exposed workers. (Baseline data available in 1991)

Services and Protection Objectives

10.10 Implement occupational safety and health plans in 50 States for the identification, management, and prevention of leading work-related diseases and injuries within the State. (Baseline: 10 States in 1989)

10.11 Establish in 50 States exposure standards adequate to prevent the major occupational lung diseases to which their worker populations are exposed (byssinosis, asbestosis, coal workers' pneumoconiosis, and silicosis). (Baseline data available in 1991)

10.12 Increase to at least 70 percent the proportion of worksites with 50 or more employees that have implemented programs on worker health and safety. (Baseline data available in 1991)

10.13 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer back injury prevention and rehabilitation programs. (Baseline: 28.6 percent offered back care activities in 1985)

10.14 Establish in 50 States either public health or labor department programs that provide consultation and assistance to small businesses to implement safety and health programs for their employees. (Baseline data available in 1991)

10.15 Increase to at least 75 percent the proportion of primary care providers who routinely elicit occupational health exposures as a part of patient history and provide relevant counseling. (Baseline data available in 1992)

11. Environmental Health

Health Status Objectives

11.1 Reduce asthma morbidity, as measured by a reduction in asthma hospitalizations to no more than 160 per 100,000 people. (Baseline: 188 per 100,000 in 1987)

		Special Population Targets	
	Asthma Hospitalizations (per 100,000)	*1987 Baseline*	*2000 Target*
11.1a	Blacks and other nonwhites	334	265
11.1b	Children	284[†]	225

[†] *Children aged 14 and younger*

11.2* Reduce the prevalence of serious mental retardation among school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

11.3 Reduce outbreaks of waterborne disease from infectious agents and chemical poisoning to no more than 11 per year. (Baseline: Average of 31 outbreaks per year during 1981-88)

Type-Specific Target

	Average Annual Number of Waterborne Disease Outbreaks	*1981-88 Baseline*	*2000 Target*
11.3a	People served by community water systems	13	6

Note: Community water systems are public or investor-owned water systems that serve large or small communities, subdivisions, or trailer parks with at least 15 service connections or 25 year-round residents.

11.4 Reduce the prevalence of blood lead levels exceeding 15 μg/dL and 25 μg/dL among children aged 6 months through 5 years to no more than 500,000 and zero, respectively. (Baseline: An estimated 3 million children had levels exceeding 15 μg/dL, and 234,000 had levels exceeding 25 μg/dL, in 1984)

Special Population Target

	Prevalence of Blood Lead Levels Exceeding 15 μg/dL & 25 μg/dL	*1984 Baseline*	*2000 Target*
11.4a	Inner-city low-income black children (annual family income <$6,000 in 1984 dollars)	234,900 & 36,700	75,000 & 0

Risk Reduction Objectives

11.5 Reduce human exposure to criteria air pollutants, as measured by an increase to at least 85 percent in the proportion of people who live in counties that have not exceeded any Environmental Protection Agency standard for air quality in the previous 12 months. (Baseline: 49.7 percent in 1988)

Proportion Living in Counties That Have Not Exceeded Criteria Air Pollutant Standards in 1988 for:	
Ozone	53.6%
Carbon monoxide	87.8%
Nitrogen dioxide	96.6%
Sulfur dioxide	99.3%
Particulates	89.4%
Lead	99.3%
Total (any of above pollutants)	49.7%

Note: An individual living in a county that exceeds an air quality standard may not actually be exposed to unhealthy air. Of all criteria air pollutants, ozone is the most likely to have fairly uniform concentrations throughout an area. Exposure is to criteria air pollutants in ambient air. Due to weather fluctuations, multi-year averages may be the most appropriate way to monitor progress toward this objective.

11.6 Increase to at least 40 percent the proportion of homes in which homeowners/occupants have tested for radon concentrations and that have either been found to pose minimal risk or have been modified to reduce risk to health. (Baseline: Less than 5 percent of homes had been tested in 1989)

Special Population Targets

	Testing and Modification As Necessary	*Baseline*	*2000 Target*
11.6a	Homes with smokers and former smokers	—	50%
11.6b	Homes with children	—	50%

11.7 Reduce human exposure to toxic agents by confining total pounds of toxic agents released into the air, water, and soil each year to no more than:

0.24 billion pounds of those toxic agents included on the Department of Health and Human Services list of carcinogens. (Baseline: 0.32 billion pounds in 1988)

2.6 billion pounds of those toxic agents included on the Agency for Toxic Substances and Disease Registry list of the most toxic chemicals. (Baseline: 2.62 billion pounds in 1988)

11.8 Reduce human exposure to solid waste-related water, air, and soil contamination, as measured by a reduction in average pounds of municipal solid waste produced per person each day to no more than 3.6 pounds. (Baseline: 4.0 pounds per person each day in 1988)

11.9 Increase to at least 85 percent the proportion of people who receive a supply of drinking water that meets the safe drinking water standards established by the Environmental Protection Agency. (Baseline: 74 percent of 58,099 community water systems serving approximately 80 percent of the population in 1988)

Note: Safe drinking water standards are measured using Maximum Contaminant Level (MCL) standards set by the Environmental Protection Agency which define acceptable levels of contaminants. See Objective 11.3 for definition of community water systems.

11.10 Reduce potential risks to human health from surface water, as measured by a decrease to no more than 15 percent in the proportion of assessed rivers, lakes, and estuaries that do not support beneficial uses, such as fishing and swimming. (Baseline: An estimated 25 percent of assessed rivers, lakes, and estuaries did not support designated beneficial uses in 1988)

Note: Designated beneficial uses, such as aquatic life support, contact recreation (swimming), and water supply, are designated by each State and approved by the Environmental Protection Agency. Support of beneficial use is a proxy measure of risk to human health, as many pollutants causing impaired water uses do not have human health effects (e.g., siltation, impaired fish habitat).

Services and Protection Objectives

11.11 Perform testing for lead-based paint in at least 50 percent of homes built before 1950. (Baseline data available in 1991)

11.12 Expand to at least 35 the number of States in which at least 75 percent of local jurisdictions have adopted construction standards and techniques that minimize elevated indoor radon levels in those new building areas locally determined to have elevated radon levels. (Baseline: 1 State in 1989)

Note: Since construction codes are frequently adopted by local jurisdictions rather than States, progress toward this objective also may be tracked using the proportion of cities and counties that have adopted such construction standards.

11.13 Increase to at least 30 the number of States requiring that prospective buyers be informed of the presence of lead-based paint and radon concentrations in all buildings offered for sale. (Baseline: 2 States required disclosure of lead-based paint in 1989; 1 State required disclosure of radon concentrations in 1989; 2 additional States required disclosure that radon has been found in the State and that testing is desirable in 1989)

11.14 Eliminate significant health risks from National Priority List hazardous waste sites, as measured by performance of clean-up at these sites sufficient to eliminate immediate and significant health threats as specified in health assessments completed at all sites. (Baseline: 1,082 sites were on the list in March of 1990; of these, health assessments have been conducted for approximately 1,000)

Note: The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 required the Environmental Protection Agency to develop criteria for determining priorities among hazardous waste sites and to develop and maintain a list of these priority sites. The resulting list is called the National Priorities List (NPL).

11.15 Establish programs for recyclable materials and household hazardous waste in at least 75 percent of counties. (Baseline: Approximately 850 programs in 41 States collected household toxic waste in 1987; extent of recycling collections unknown)

11.16 Establish and monitor in at least 35 States plans to define and track sentinel environmental diseases. (Baseline: 0 States in 1990)

Note: Sentinel environmental diseases include lead poisoning, other heavy metal poisoning (e.g., cadmium, arsenic, and mercury), pesticide poisoning, carbon monoxide poisoning, heatstroke, hypothermia, acute chemical poisoning, methemoglobinemia, and respiratory diseases triggered by environmental factors (e.g., asthma).

12. Food and Drug Safety

Health Status Objectives

12.1 Reduce infections caused by key foodborne pathogens to incidences of no more than:

Disease (per 100,000)	*1987 Baseline*	*2000 Target*
Salmonella species	18	16
Campylobacter jejuni	50	25
Escherichia coli 0157:H7	8	4
Listeria monocytogenes	0.7	0.5

12.2 Reduce outbreaks of infections due to *Salmonella enteritidis* to fewer than 25 outbreaks yearly. (Baseline: 77 outbreaks in 1989)

Risk Reduction Objective

12.3 Increase to at least 75 percent the proportion of households in which principal food preparers routinely refrain from leaving perishable food out of the refrigerator for over 2 hours and wash cutting boards and utensils with soap after contact with raw meat and poultry. (Baseline: For refrigeration of perishable foods, 70 percent; for washing cutting boards with soap, 66 percent; and for washing utensils with soap, 55 percent, in 1988)

Services and Protection Objectives

12.4 Extend to at least 70 percent the proportion of States and territories that have implemented model food codes for institutional food operations and to at least 70 percent the proportion that have adopted the new uniform food protection code ("Unicode") that sets recommended standards for regulation of all food operations. (Baseline: For institutional food operations currently using FDA's recommended model codes, 20 percent; for the new Unicode to be released in 1991, 0 percent, in 1990)

12.5 Increase to at least 75 percent the proportion of pharmacies and other dispensers of prescription medications that use linked systems to provide alerts to potential adverse drug reactions among medications dispensed by different sources to individual patients. (Baseline data available in 1993)

12.6 Increase to at least 75 percent the proportion of primary care providers who routinely review with their patients aged 65 and older all prescribed and over-the-counter medicines taken by their patients each time a new medication is prescribed. (Baseline data available in 1992)

13. Oral Health

Health Status Objectives

13.1 Reduce dental caries (cavities) so that the proportion of children with one or more caries (in permanent or primary teeth) is no more than 35 percent among children aged 6 through 8 and no more than 60 percent among adolescents aged 15. (Baseline: 53 percent of children aged 6 through 8 in 1986-87; 78 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Dental Caries Prevalence	*1986-87 Baseline*	*2000 Target*
13.1a	Children aged 6-8 whose parents have less than high school education	70%	45%
13.1b	American Indian/Alaska Native children aged 6-8	92%[†] 52%[‡]	45%
13.1c	Black children aged 6-8	61%	40%
13.1d	American Indian/Alaska Native adolescents aged 15	93%[‡]	70%

[†] *In primary teeth in 1983-84* [‡] *In permanent teeth in 1983-84*

13.2 Reduce untreated dental caries so that the proportion of children with untreated caries (in permanent or primary teeth) is no more than 20 percent among children aged 6 through 8 and no more than 15 percent among adolescents aged 15. (Baseline: 27 percent of children aged 6 through 8 in 1986; 23 percent of adolescents aged 15 in 1986-87)

Special Population Targets

	Untreated Dental Caries:	*1986-87 Baseline*	*2000 Target*
	Among Children—		
13.2a	Children aged 6-8 whose parents have less than high school education	43%	30%
13.2b	American Indian/Alaska Native children aged 6-8	64%[†]	35%
13.2c	Black children aged 6-8	38%	25%
13.2d	Hispanic children aged 6-8	36%[‡]	25%
	Among Adolescents—		
13.2a	Adolescents aged 15 whose parents have less than a high school education	41%	25%
13.2b	American Indian/Alaska Native adolescents aged 15	84%[†]	40%
13.2c	Black adolescents aged 15	38%	20%
13.2d	Hispanic adolescents aged 15	31-47%[‡]	25%

[†] *1983-84 baseline* [‡] *1982-84 baseline*

13.3 Increase to at least 45 percent the proportion of people aged 35 through 44 who have never lost a permanent tooth due to dental caries or periodontal diseases. (Baseline: 31 percent of employed adults had never lost a permanent tooth for any reason in 1985-86)

Note: Never lost a permanent tooth is having 28 natural teeth exclusive of third molars.

13.4 Reduce to no more than 20 percent the proportion of people aged 65 and older who have lost all of their natural teeth. (Baseline: 36 percent in 1986)

Special Population Target

	Complete Tooth Loss Prevalence	*1986 Baseline*	*2000 Target*
13.4a	Low-income people (annual family income <$15,000)	46%	25%

13.5 Reduce the prevalence of gingivitis among people aged 35 through 44 to no more than 30 percent. (Baseline: 42 percent in 1985-86)

Special Population Targets

	Gingivitis Prevalence	*1985 Baseline*	*2000 Target*
13.5a	Low-income people (annual family income <$12,500)	50%	35%
13.5b	American Indians/Alaska Natives	95%[†]	50%
13.5c	Hispanics		50%
	Mexican Americans	74%[‡]	
	Cubans	79%[‡]	
	Puerto Ricans	82%[‡]	

[†] *1983-84 baseline* [‡] *1982-84 baseline*

13.6 Reduce destructive periodontal diseases to a prevalence of no more than 15 percent among people aged 35 through 44. (Baseline: 24 percent in 1985-86)

Note: Destructive periodontal disease is one or more sites with 4 millimeters or greater loss of tooth attachment.

13.7 Reduce deaths due to cancer of the oral cavity and pharynx to no more than 10.5 per 100,000 men aged 45 through 74 and 4.1 per 100,000 women aged 45 through 74. (Baseline: 12.1 per 100,000 men and 4.1 per 100,000 women in 1987)

Risk Reduction Objectives

13.8 Increase to at least 50 percent the proportion of children who have received protective sealants on the occlusal (chewing) surfaces of permanent molar teeth. (Baseline: 11 percent of children aged 8 and 8 percent of adolescents aged 14 in 1986-87)

Note: Progress toward this objective will be monitored based on prevalence of sealants in children at age 8 and at age 14, when the majority of first and second molars, respectively, are erupted.

13.9 Increase to at least 75 percent the proportion of people served by community water systems providing optimal levels of fluoride. (Baseline: 62 percent in 1989)

Note: Optimal levels of fluoride are determined by the mean maximum daily air temperature over a 5-year period and range between 0.7 and 1.2 parts of fluoride per one million parts of water (ppm).

13.10 Increase use of professionally or self-administered topical or systemic (dietary) fluorides to at least 85 percent of people not receiving optimally fluoridated public water. (Baseline: An estimated 50 percent in 1989)

13.11* Increase to at least 75 percent the proportion of parents and caregivers who use feeding practices that prevent baby bottle tooth decay. (Baseline data available in 1991)

Special Population Targets

Appropriate Feeding Practices	*Baseline*	*2000 Target*
13.11a Parents and caregivers with less than high school education	—	65%
13.11b American Indian/Alaska Native parents and caregivers	—	65%

Services and Protection Objectives

13.12 Increase to at least 90 percent the proportion of all children entering school programs for the first time who have received an oral health screening, referral, and followup for necessary diagnostic, preventive, and treatment services. (Baseline: 66 percent of children aged 5 visited a dentist during the previous year in 1986)

Note: School programs include Head Start, prekindergarten, kindergarten, and 1st grade.

13.13 Extend to all long-term institutional facilities the requirement that oral examinations and services be provided no later than 90 days after entry into these facilities. (Baseline: Nursing facilities receiving Medicaid or Medicare reimbursement will be required to provide for oral examinations within 90 days of patient entry beginning in 1990; baseline data unavailable for other institutions)

Note: Long-term institutional facilities include nursing homes, prisons, juvenile homes, and detention facilities.

13.14 Increase to at least 70 percent the proportion of people aged 35 and older using the oral health care system during each year. (Baseline: 54 percent in 1986)

Special Population Targets

Proportion Using Oral Health Care System During Each Year	*1986 Baseline*	*2000 Target*
13.14a Edentulous people	11%	50%
13.14b People aged 65 and older	42%	60%

13.15 Increase to at least 40 the number of States that have an effective system for recording and referring infants with cleft lips and/or palates to craniofacial anomaly teams. (Baseline: In 1988, approximately 25 States had a central recording mechanism for cleft lip and/or palate and approximately 25 States had an organized referral system to craniofacial anomaly teams)

13.16* Extend requirement of the use of effective head, face, eye, and mouth protection to all organizations, agencies, and institutions sponsoring sporting and recreation events that pose risks of injury. (Baseline: Only National Collegiate Athletic Association football, hockey, and lacrosse; high school football; amateur boxing; and amateur ice hockey in 1988)

14. Maternal and Infant Health

Health Status Objectives

14.1 Reduce the infant mortality rate to no more than 7 per 1,000 live births. (Baseline: 10.1 per 1,000 live births in 1987)

Special Population Targets

	Infant Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1a	Blacks	17.9	11
14.1b	American Indians/Alaska Natives	12.5†	8.5
14.1c	Puerto Ricans	12.9†	8

Type-Specific Targets

	Neonatal and Postneonatal Mortality (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.1d	Neonatal mortality	6.5	4.5
14.1e	Neonatal mortality among blacks	11.7	7
14.1f	Neonatal mortality among Puerto Ricans	8.6†	5.2
14.1g	Postneonatal mortality	3.6	2.5
14.1h	Postneonatal mortality among blacks	6.1	4
14.1i	Postneonatal mortality among American Indians/Alaska Natives	6.5†	4
14.1j	Postneonatal mortality among Puerto Ricans	4.3†	2.8

†*1984 baseline*

Note: Infant mortality is deaths of infants under 1 year; neonatal mortality is deaths of infants under 28 days; and postneonatal mortality is deaths of infants aged 28 days up to 1 year.

14.2 Reduce the fetal death rate (20 or more weeks of gestation) to no more than 5 per 1,000 live births plus fetal deaths. (Baseline: 7.6 per 1,000 live births plus fetal deaths in 1987)

Special Population Target

	Fetal Deaths	*1987 Baseline*	*2000 Target*
14.2a	Blacks	12.8†	7.5†

† *Per 1,000 live births plus fetal deaths*

14.3 Reduce the maternal mortality rate to no more than 3.3 per 100,000 live births. (Baseline: 6.6 per 100,000 in 1987)

Special Population Target

	Maternal Mortality	*1987 Baseline*	*2000 Target*
14.3a	Blacks	14.2†	5†

† *Per 100,000 live births*

Note: The objective uses the maternal mortality rate as defined by the National Center for Health Statistics. However, if other sources of maternal mortality data are used, a 50-percent reduction in maternal mortality is the intended target.

14.4 Reduce the incidence of fetal alcohol syndrome to no more than 0.12 per 1,000 live births. (Baseline: 0.22 per 1,000 live births in 1987)

Special Population Targets

	Fetal Alcohol Syndrome (per 1,000 live births)	*1987 Baseline*	*2000 Target*
14.4a	American Indians/Alaska Natives	4	2
14.4b	Blacks	0.8	0.4

Risk Reduction Objectives

14.5 Reduce low birth weight to an incidence of no more than 5 percent of live births and very low birth weight to no more than 1 percent of live births. (Baseline: 6.9 and 1.2 percent, respectively, in 1987)

Special Population Target

		1987 Baseline	*2000 Target*
	Low Birth Weight		
14.5a	Blacks	12.7%	9%
	Very Low Birth Weight		
	Blacks	2.7%	2%

Note: Low birth weight is weight at birth of less than 2,500 grams; very low birth weight is weight at birth of less than 1,500 grams.

14.6 Increase to at least 85 percent the proportion of mothers who achieve the minimum recommended weight gain during their pregnancies. (Baseline: 67 percent of married women in 1980)

Note: Recommended weight gain is pregnancy weight gain recommended in the 1990 National Academy of Science's report, Nutrition During Pregnancy.

14.7 Reduce severe complications of pregnancy to no more than 15 per 100 deliveries. (Baseline: 22 hospitalizations (prior to delivery) per 100 deliveries in 1987)

Note: Severe complications of pregnancy will be measured using hospitalizations due to pregnancy-related complications.

14.8 Reduce the cesarean delivery rate to no more than 15 per 100 deliveries. (Baseline: 24.4 per 100 deliveries in 1987)

Type-Specific Targets

	Cesarean Delivery (per 100 deliveries)	*1987 Baseline*	*2000 Target*
14.8a	Primary (first time) cesarean delivery	17.4	12
14.8b	Repeat cesarean deliveries	91.2†	65†

†*Among women who had a previous cesarean delivery*

14.9* Increase to at least 75 percent the proportion of mothers who breastfeed their babies in the early postpartum period and to at least 50 percent the proportion who continue breastfeeding until their babies are 5 to 6 months old. (Baseline: 54 percent at discharge from birth site and 21 percent at 5 to 6 months in 1988)

Special Population Targets

	Mothers Breastfeeding Their Babies:	*1988 Baseline*	*2000 Target*
	During Early Postpartum Period —		
14.9a	Low-income mothers	32%	75%
14.9b	Black mothers	25%	75%
14.9c	Hispanic mothers	51%	75%
14.9d	American Indian/Alaska Native mothers	47%	75%
	At Age 5-6 Months —		
14.9a	Low-income mothers	9%	50%
14.9b	Black mothers	8%	50%
14.9c	Hispanic mothers	16%	50%
14.9d	American Indian/Alaska Native mothers	28%	50%

14.10 Increase abstinence from tobacco use by pregnant women to at least 90 percent and increase abstinence from alcohol, cocaine, and marijuana by pregnant women by at least 20 percent. (Baseline: 75 percent of pregnant women abstained from tobacco use in 1985)

Note: Data for alcohol, cocaine, and marijuana use by pregnant women will be available from the National Maternal and Infant Health Survey, CDC, in 1991.

Services and Protection Objectives

14.11 Increase to at least 90 percent the proportion of all pregnant women who receive prenatal care in the first trimester of pregnancy. (Baseline: 76 percent of live births in 1987)

Special Population Targets

	Proportion of Pregnant Women Receiving Early Prenatal Care	*1987 Baseline*	*2000 Target*
14.11a	Black women	61.1†	90†
14.11b	American Indian/Alaska Native women	60.2†	90†
14.11c	Hispanic women	61.0†	90†

† *Percent of live births*

14.12* Increase to at least 60 percent the proportion of primary care providers who provide age-appropriate preconception care and counseling. (Baseline data available in 1992)

14.13 Increase to at least 90 percent the proportion of women enrolled in prenatal care who are offered screening and counseling on prenatal detection of fetal abnormalities. (Baseline data available in 1991)

Note: This objective will be measured by tracking use of maternal serum alpha-fetoprotein screening tests.

14.14 Increase to at least 90 percent the proportion of pregnant women and infants who receive risk-appropriate care. (Baseline data available in 1991)

Note: This objective will be measured by tracking the proportion of very low birth weight infants (less than 1,500 grams) born in facilities covered by a neonatologist 24 hours a day.

14.15 Increase to at least 95 percent the proportion of newborns screened by State-sponsored programs for genetic disorders and other disabling conditions and to 90 percent the proportion of newborns testing positive for disease who receive appropriate treatment. (Baseline: For sickle cell anemia, with 20 States reporting, approximately 33 percent of live births screened (57 percent of black infants); for galactosemia, with 38 States reporting, approximately 70 percent of live births screened)

Note: As measured by the proportion of infants served by programs for sickle cell anemia and galactosemia. Screening programs should be appropriate for State demographic characteristics.

14.16 Increase to at least 90 percent the proportion of babies aged 18 months and younger who receive recommended primary care services at the appropriate intervals. (Baseline data available in 1992)

15. Heart Disease and Stroke

Health Status Objectives

15.1* Reduce coronary heart disease deaths to no more than 100 per 100,000 people. (Age-adjusted baseline: 135 per 100,000 in 1987)

Special Population Target

	Coronary Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
15.1a	Blacks	163	115

15.2 Reduce stroke deaths to no more than 20 per 100,000 people. (Age-adjusted baseline: 30.3 per 100,000 in 1987)

Special Population Target

	Stroke Deaths (per 100,000)	*1987 Baseline*	*2000 Target*
15.2a	Blacks	51.2	27

15.3 Reverse the increase in end-stage renal disease (requiring maintenance dialysis or transplantation) to attain an incidence of no more than 13 per 100,000. (Baseline: 13.9 per 100,000 in 1987)

Special Population Target

	ESRD Incidence (per 100,000)	*1987 Baseline*	*2000 Target*
15.3a	Blacks	32.4	30

Risk Reduction Objectives

15.4 Increase to at least 50 percent the proportion of people with high blood pressure whose blood pressure is under control. (Baseline: 11 percent controlled among people aged 18 through 74 in 1976-80; an estimated 24 percent for people aged 18 and older in 1982-84)

Special Population Target

	High Blood Pressure Control	*1976-80 Baseline*	*1982-84 Baseline*	*2000 Target*
15.4a	Men with high blood pressure	6%	16%	40%

Note: People with high blood pressure have blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or take antihypertensive medication. Blood pressure control is defined as maintaining a blood pressure less than 140 mm Hg systolic and 90 mm Hg diastolic. In NHANES II and the Seven States Study, control of hypertension did not include nonpharmacologic treatment. In NHANES III, those controlling their high blood pressure without medication (e.g., through weight loss, low sodium diets, or restriction of alcohol) will be included.

15.5 Increase to at least 90 percent the proportion of people with high blood pressure who are taking action to help control their blood pressure. (Baseline: 79 percent of aware hypertensives aged 18 and older were taking action to control their blood pressure in 1985)

Special Population Targets

	Taking Action to Control Blood Pressure	*1985 Baseline*	*2000 Target*
15.5a	White hypertensive men aged 18-34	51%[†]	80%
15.5b	Black hypertensive men aged 18-34	63%[†]	80%

[†] *Baseline for aware hypertensive men*

Note: High blood pressure is defined as blood pressure equal to or greater than 140 mm Hg systolic and/or 90 mm Hg diastolic and/or taking antihypertensive medication. Actions to control blood pressure include taking medication, dieting to lose weight, cutting down on salt, and exercising.

15.6 Reduce the mean serum cholesterol level among adults to no more than 200 mg/dL. (Baseline: 213 mg/dL among people aged 20 through 74 in 1976-80, 211 mg/dL for men and 215 mg/dL for women)

15.7 Reduce the prevalence of blood cholesterol levels of 240 mg/dL or greater to no more than 20 percent among adults. (Baseline: 27 percent for people aged 20 through 74 in 1976-80, 29 percent for women and 25 percent for men)

15.8 Increase to at least 60 percent the proportion of adults with high blood cholesterol who are aware of their condition and are taking action to reduce their blood cholesterol to recommended levels. (Baseline: 11 percent of all people aged 18 and older, and thus an estimated 30 percent of people with high blood cholesterol, were aware that their blood cholesterol level was high in 1988)

Note: "High blood cholesterol" means a level that requires diet and, if necessary, drug treatment. Actions to control high blood cholesterol include keeping medical appointments, making recommended dietary changes (e.g., reducing saturated fat, total fat, and dietary cholesterol), and, if necessary, taking prescribed medication.

15.9* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

15.10* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
15.10a Low-income women aged 20 and older	37%	25%
15.10b Black women aged 20 and older	44%	30%
15.10c Hispanic women aged 20 and older		25%
Mexican-American women	39%[‡]	
Cuban women	34%[‡]	
Puerto Rican women	37%[‡]	
15.10d American Indians/Alaska Natives	29-75%[§]	30%
15.10e People with disabilities	36%[+]	25%
15.10f Women with high blood pressure	50%	41%
15.10g Men with high blood pressure	39%	35%

[†] *Baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

15.11* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

15.12* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
15.12a People with a high school education or less aged 20 and older	34%	20%
15.12b Blue-collar workers aged 20 and older	36%	20%
15.12c Military personnel	42%[†]	20%
15.12d Blacks aged 20 and older	34%	18%
15.12e Hispanics aged 20 and older	33%[‡]	18%
15.12f American Indians/Alaska Natives	42-70%[§]	20%
15.12g Southeast Asian men	55%[+]	20%
15.12h Women of reproductive age	29%[††]	12%
15.12i Pregnant women	25%[‡‡]	10%
15.12j Women who use oral contraceptives	36%[§§]	10%

[†] *1988 baseline* [‡] *1982-84 baseline for Hispanics aged 20-74* [§] *1979-87 estimates for different tribes*

[+] *1984-88 baseline* [††] *Baseline for women aged 18-44* [‡‡] *1985 baseline* [§§] *1983 baseline*

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

Services and Protection Objectives

15.13 Increase to at least 90 percent the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high. (Baseline: 61 percent of people aged 18 and older had their blood pressure measured within the preceding 2 years and were given the systolic and diastolic values in 1985)

Note: A blood pressure measurement within the preceding 2 years refers to a measurement by a health professional or other trained observer.

15.14 Increase to at least 75 percent the proportion of adults who have had their blood cholesterol checked within the preceding 5 years. (Baseline: 59 percent of people aged 18 and older had "ever" had their cholesterol checked in 1988; 52 percent were checked "within the preceding 2 years" in 1988)

15.15 Increase to at least 75 percent the proportion of primary care providers who initiate diet and, if necessary, drug therapy at levels of blood cholesterol consistent with current management guidelines for patients with high blood cholesterol. (Baseline data available in 1991)

Note: Current treatment recommendations are outlined in detail in the Report of the Expert Panel on the Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults, released by the National Cholesterol Education Program in 1987. Guidelines appropriate for children are currently being established. Treatment recommendations are likely to be refined over time. Thus, for the year 2000, "current" means whatever recommendations are then in effect.

15.16 Increase to at least 50 percent the proportion of worksites with 50 or more employees that offer high blood pressure and/or cholesterol education and control activities to their employees. (Baseline: 16.5 percent offered high blood pressure activities and 16.8 percent offered nutrition education activities in 1985)

15.17 Increase to at least 90 percent the proportion of clinical laboratories that meet the recommended accuracy standard for cholesterol measurement. (Baseline: 53 percent in 1985)

16. Cancer

Health Status Objectives

16.1* Reverse the rise in cancer deaths to achieve a rate of no more than 130 per 100,000 people. (Age-adjusted baseline: 133 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 171 and 175 per 100,000, respectively.

16.2* Slow the rise in lung cancer deaths to achieve a rate of no more than 42 per 100,000 people. (Age-adjusted baseline: 37.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 47.9 and 53 per 100,000, respectively.

16.3 Reduce breast cancer deaths to no more than 20.6 per 100,000 women. (Age-adjusted baseline: 22.9 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 27.2 and 25.2 per 100,000, respectively.

16.4 Reduce deaths from cancer of the uterine cervix to no more than 1.3 per 100,000 women. (Age-adjusted baseline: 2.8 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 3.2 and 1.5 per 100,000, respectively.

16.5 Reduce colorectal cancer deaths to no more than 13.2 per 100,000 people. (Age-adjusted baseline: 14.4 per 100,000 in 1987)

Note: In its publications, the National Cancer Institute age adjusts cancer death rates to the 1970 U.S. population. Using the 1970 standard, the equivalent baseline and target values for this objective would be 20.1 and 18.7 per 100,000, respectively.

Risk Reduction Objectives

16.6* Reduce cigarette smoking to a prevalence of no more than 15 percent among people aged 20 and older. (Baseline: 29 percent in 1987, 32 percent for men and 27 percent for women)

Special Population Targets

	Cigarette Smoking Prevalence	*1987 Baseline*	*2000 Target*
16.6a	People with a high school education or less aged 20 and older	34%	20%
16.6b	Blue-collar workers aged 20 and older	36%	20%
16.6c	Military personnel	42%[†]	20%
16.6d	Blacks aged 20 and older	34%	18%
16.6e	Hispanics aged 20 and older	33%[‡]	18%
16.6f	American Indians/Alaska Natives	42-70%[§]	20%
16.6g	Southeast Asian men	55%[+]	20%
16.6h	Women of reproductive age	29%[††]	12%
16.6i	Pregnant women	25%[‡‡]	10%
16.6j	Women who use oral contraceptives	36%[§§]	10%

[†] 1988 baseline [‡] 1982-84 baseline for Hispanics aged 20-74 [§] 1979-87 estimates for different tribes
[+] 1984-88 baseline [††] Baseline for women aged 18-44 [‡‡] 1985 baseline [§§] 1983 baseline

Note: A cigarette smoker is a person who has smoked at least 100 cigarettes and currently smokes cigarettes.

16.7* Reduce dietary fat intake to an average of 30 percent of calories or less and average saturated fat intake to less than 10 percent of calories among people aged 2 and older. (Baseline: 36 percent of calories from total fat and 13 percent from saturated fat for people aged 20 through 74 in 1976-80; 36 percent and 13 percent for women aged 19 through 50 in 1985)

Note: The inclusion of a saturated fat target in this objective should not be interpreted as evidence that reducing only saturated fat will reduce cancer risk. Epidemiologic and experimental animal studies suggest that the amount of fat consumed rather than the specific type of fat can influence the risk of some cancers.

16.8* Increase complex carbohydrate and fiber-containing foods in the diets of adults to 5 or more daily servings for vegetables (including legumes) and fruits, and to 6 or more daily servings for grain products. (Baseline: 2½ servings of fruits and vegetables and 3 servings of grain products for women aged 19 through 50 in 1985)

16.9 Increase to at least 60 percent the proportion of people of all ages who limit sun exposure, use sunscreens and protective clothing when exposed to sunlight, and avoid artificial sources of ultraviolet light (e.g., sun lamps, tanning booths). (Baseline data available in 1992)

Services and Protection Objectives

16.10 Increase to at least 75 percent the proportion of primary care providers who routinely counsel patients about tobacco use cessation, diet modification, and cancer screening recommendations. (Baseline: About 52 percent of internists reported counseling more than 75 percent of their smoking patients about smoking cessation in 1986)

16.11 Increase to at least 80 percent the proportion of women aged 40 and older who have ever received a clinical breast examination and a mammogram, and to at least 60 percent those aged 50 and older who have received them within the preceding 1 to 2 years. (Baseline: 36 percent of women aged 40 and older "ever" in 1987; 25 percent of women aged 50 and older "within the preceding 2 years" in 1987)

Special Population Targets

Clinical Breast Exam & Mammogram:	*1987 Baseline*	*2000 Target*
Ever Received—		
16.11a Hispanic women aged 40 and older	20%	80%
16.11b Low-income women aged 40 and older (annual family income <$10,000)	22%	80%
16.11c Women aged 40 and older with less than high school education	23%	80%
16.11d Women aged 70 and older	25%	80%
16.11e Black women aged 40 and older	28%	80%
Received Within Preceding 2 Years—		
16.11a Hispanic women aged 50 and older	18%	60%
16.11b Low-income women aged 50 and older (annual family income <$10,000)	15%	60%
16.11c Women aged 50 and older with less than high school education	16%	60%
16.11d Women aged 70 and older	18%	60%
16.11e Black women aged 50 and older	19%	60%

16.12 Increase to at least 95 percent the proportion of women aged 18 and older with uterine cervix who have ever received a Pap test, and to at least 85 percent those who received a Pap test within the preceding 1 to 3 years. (Baseline: 88 percent "ever" and 75 percent "within the preceding 3 years" in 1987)

Special Population Targets

Pap Test:	*1987 Baseline*	*2000 Target*
Ever Received—		
16.12a Hispanic women aged 18 and older	75%	95%
16.12b Women aged 70 and older	76%	95%
16.12c Women aged 18 and older with less than high school education	79%	95%
16.12d Low-income women aged 18 and older (annual family income <$10,000)	80%	95%
Received Within Preceding 3 Years—		
16.12a Hispanic women aged 18 and older	66%	80%
16.12b Women aged 70 and older	44%	70%
16.12c Women aged 18 and older with less than high school education	58%	75%
16.12d Low-income women aged 18 and older (annual family income <$10,000)	64%	80%

16.13 Increase to at least 50 percent the proportion of people aged 50 and older who have received fecal occult blood testing within the preceding 1 to 2 years, and to at least 40 percent those who have ever received proctosigmoidoscopy. (Baseline: 27 percent received fecal occult blood testing during the preceding 2 years in 1987; 25 percent had ever received proctosigmoidoscopy in 1987)

16.14 Increase to at least 40 percent the proportion of people aged 50 and older visiting a primary care provider in the preceding year who have received oral, skin, and digital rectal examinations during one such visit. (Baseline: An estimated 27 percent received a digital rectal exam during a physician visit within the preceding year in 1987)

16.15 Ensure that Pap tests meet quality standards by monitoring and certifying all cytology laboratories. (Baseline data available in 1991)

16.16 Ensure that mammograms meet quality standards by monitoring and certifying at least 80 percent of mammography facilities. (Baseline: An estimated 18 to 21 percent certified by the American College of Radiology as of June 1990)

17. Diabetes and Chronic Disabling Conditions

Health Status Objectives

Chronic Disabling Conditions

17.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
17.1a	Blacks	56	60
17.1b	Hispanics	62	65
17.1c	People aged 65 and older	12[†]	14[†]

[†] *Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

17.2 Reduce to no more than 8 percent the proportion of people who experience a limitation in major activity due to chronic conditions. (Baseline: 9.4 percent in 1988)

Special Population Targets

	Prevalence of Disability	*1988 Baseline*	*2000 Target*
17.2a	Low-income people (annual family income <$10,000 in 1988)	18.9%	15%
17.2b	American Indians/Alaska Natives	13.4%[†]	11%
17.2c	Blacks	11.2%	9%

[†] *1983-85 baseline*

Note: Major activity refers to the usual activity for one's age-gender group whether it is working, keeping house, going to school, or living independently. Chronic conditions are defined as conditions that either (1) were first noticed 3 or more months ago, or (2) belong to a group of conditions such as heart disease and diabetes, which are considered chronic regardless of when they began.

17.3 Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities, thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

Special Population Target

	Difficulty Performing Self-Care Activities (per 1,000)	*1984-85 Baseline*	*2000 Target*
17.3a	People aged 85 and older	371	325

Note: Personal care activities are bathing, dressing, using the toilet, getting in and out of bed or chair, and eating.

17.4 Reduce to no more than 10 percent the proportion of people with asthma who experience activity limitation. (Baseline: Average of 19.4 percent during 1986-88)

Note: Activity limitation refers to any self-reported limitation in activity attributed to asthma.

17.5 Reduce activity limitation due to chronic back conditions to a prevalence of no more than 19 per 1,000 people. (Baseline: Average of 21.9 per 1,000 during 1986-88)

Note: Chronic back conditions include intervertebral disk disorders, curvature of the back or spine, and other self-reported chronic back impairments such as permanent stiffness or deformity of the back or repeated trouble with the back. Activity limitation refers to any self-reported limitation in activity attributed to a chronic back condition.

17.6 Reduce significant hearing impairment to a prevalence of no more than 82 per 1,000 people. (Baseline: Average of 88.9 per 1,000 during 1986-88)

Special Population Target

	Hearing Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*
17.6a	People aged 45 and older	203	180

Note: Hearing impairment covers the range of hearing deficits from mild loss in one ear to profound loss in both ears. Generally, inability to hear sounds at levels softer (less intense) than 20 decibels (dB) constitutes abnormal hearing. Significant hearing impairment is defined as having hearing thresholds for speech poorer than 25 dB. However, for this objective, self-reported hearing impairment (i.e., deafness in one or both ears or any trouble hearing in one or both ears) will be used as a proxy measure for significant hearing impairment.

17.7 Reduce significant visual impairment to a prevalence of no more than 30 per 1,000 people. (Baseline: Average of 34.5 per 1,000 during 1986-88)

Special Population Target

	Visual Impairment (per 1,000)	*1986-88 Baseline*	*2000 Target*
17.7a	People aged 65 and older	87.7	70

Note: Significant visual impairment is generally defined as a permanent reduction in visual acuity and/or field of vision which is not correctable with eyeglasses or contact lenses. Severe visual impairment is defined as inability to read ordinary newsprint even with corrective lenses. For this objective, self-reported blindness in one or both eyes and other self-reported visual impairments (i.e., any trouble seeing with one or both eyes even when wearing glasses or colorblindness) will be used as a proxy measure for significant visual impairment.

17.8* Reduce the prevalence of serious mental retardation in school-aged children to no more than 2 per 1,000 children. (Baseline: 2.7 per 1,000 children aged 10 in 1985-88)

Note: Serious mental retardation is defined as an Intelligence Quotient (I.Q.) less than 50. This includes individuals defined by the American Association of Mental Retardation as profoundly retarded (I.Q. of 20 or less), severely retarded (I.Q. of 21-35), and moderately retarded (I.Q. of 36-50).

Diabetes

17.9 Reduce diabetes-related deaths to no more than 34 per 100,000 people. (Age-adjusted baseline: 38 per 100,000 in 1986)

Special Population Targets

	Diabetes-Related Deaths (per 100,000)	*1986 Baseline*	*2000 Target*
17.9a	Blacks	65	58
17.9b	American Indians/Alaska Natives	54	48

Note: Diabetes-related deaths refer to deaths from diabetes as an underlying or contributing cause.

17.10 Reduce the most severe complications of diabetes as follows:

Complications Among People With Diabetes	*1988 Baseline*	*2000 Target*
End-stage renal disease	1.5/1,000[†]	1.4/1,000
Blindness	2.2/1,000	1.4/1,000
Lower extremity amputation	8.2/1,000[†]	4.9/1,000
Perinatal mortality[‡]	5%	2%
Major congenital malformations[‡]	8%	4%

[†] *1987 baseline* [‡] *Among infants of women with established diabetes*

Special Population Targets for ESRD

	ESRD Due to Diabetes (per 1,000)	*1983-86 Baseline*	*2000 Target*
17.10a	Blacks with diabetes	2.2	2
17.10b	American Indians/Alaska Natives with diabetes	2.1	1.9

Special Population Target for Amputations

	Lower Extremity Amputations Due to Diabetes (per 1,000)	*1984-87 Baseline*	*2000 Target*
17.10c	Blacks with diabetes	10.2	6.1

Note: End-stage renal disease (ESRD) is defined as requiring maintenance dialysis or transplantation and is limited to ESRD due to diabetes. Blindness refers to blindness due to diabetic eye disease.

17.11 Reduce diabetes to an incidence of no more than 2.5 per 1,000 people and a prevalence of no more than 25 per 1,000 people. (Baselines: 2.9 per 1,000 in 1987; 28 per 1,000 in 1987)

Special Population Targets

	Prevalence of Diabetes (per 1,000)	*1982-84 Baseline*[†]	*2000 Target*
17.11a	American Indians/Alaska Natives	69[‡]	62
17.11b	Puerto Ricans	55	49
17.11c	Mexican Americans	54	49
17.11d	Cuban Americans	36	32
17.11e	Blacks	36[§]	32

[†] *1982-84 baseline for people aged 20-74*

[‡] *1987 baseline for American Indians/Alaska Natives aged 15 and older*

[§] *1987 baseline for blacks of all ages*

Risk Reduction Objectives

17.12* Reduce overweight to a prevalence of no more than 20 percent among people aged 20 and older and no more than 15 percent among adolescents aged 12 through 19. (Baseline: 26 percent for people aged 20 through 74 in 1976-80, 24 percent for men and 27 percent for women; 15 percent for adolescents aged 12 through 19 in 1976-80)

Special Population Targets

Overweight Prevalence	*1976-80 Baseline*[†]	*2000 Target*
17.12a Low-income women aged 20 and older	37%	25%
17.12b Black women aged 20 and older	44%	30%
17.12c Hispanic women aged 20 and older		25%
Mexican-American women	39%[‡]	
Cuban women	34%[‡]	
Puerto Rican women	37%[‡]	
17.12d American Indians/Alaska Natives	29-75%[§]	30%
17.12e People with disabilities	36%[+]	25%
17.12f Women with high blood pressure	50%	41%
17.12g Men with high blood pressure	39%	35%

[†] *1976-80 baseline for people aged 20-74* [‡] *1982-84 baseline for Hispanics aged 20-74*

[§] *1984-88 estimates for different tribes*

[+] *1985 baseline for people aged 20-74 who report any limitation in activity due to chronic conditions*

Note: For people aged 20 and older, overweight is defined as body mass index (BMI) equal to or greater than 27.8 for men and 27.3 for women. For adolescents, overweight is defined as BMI equal to or greater than 23.0 for males aged 12 through 14, 24.3 for males aged 15 through 17, 25.8 for males aged 18 through 19, 23.4 for females aged 12 through 14, 24.8 for females aged 15 through 17, and 25.7 for females aged 18 through 19. The values for adolescents are the age- and gender-specific 85th percentile values of the 1976-80 National Health and Nutrition Examination Survey (NHANES II), corrected for sample variation. BMI is calculated by dividing weight in kilograms by the square of height in meters. The cut points used to define overweight approximate the 120 percent of desirable body weight definition used in the 1990 objectives.

17.13* Increase to at least 30 percent the proportion of people aged 6 and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day. (Baseline: 22 percent of people aged 18 and older were active for at least 30 minutes 5 or more times per week and 12 percent were active 7 or more times per week in 1985)

Note: Light to moderate physical activity requires sustained, rhythmic muscular movements, is at least equivalent to sustained walking, and is performed at less than 60 percent of maximum heart rate for age. Maximum heart rate equals roughly 220 beats per minute minus age. Examples may include walking, swimming, cycling, dancing, gardening and yardwork, various domestic and occupational activities, and games and other childhood pursuits.

Services and Protection Objectives

17.14 Increase to at least 40 percent the proportion of people with chronic and disabling conditions who receive formal patient education including information about community and self-help resources as an integral part of the management of their condition. (Baseline data available in 1991)

Type-Specific Targets

Patient Education	*1983-84 Baseline*	*2000 Target*
17.14a People with diabetes	32% (classes) 68% (counseling)	75%
17.14b People with asthma	—	50%

17.15 Increase to at least 80 percent the proportion of providers of primary care for children who routinely refer or screen infants and children for impairments of vision, hearing, speech and language, and assess other developmental milestones as part of well-child care. (Baseline data available in 1992)

17.16 Reduce the average age at which children with significant hearing impairment are identified to no more than 12 months. (Baseline: Estimated as 24 to 30 months in 1988)

17.17 Increase to at least 60 percent the proportion of providers of primary care for older adults who routinely evaluate people aged 65 and older for urinary incontinence and impairments of vision, hearing, cognition, and functional status. (Baseline data available in 1992)

17.18 Increase to at least 90 percent the proportion of perimenopausal women who have been counseled about the benefits and risks of estrogen replacement therapy (combined with progestin, when appropriate) for prevention of osteoporosis. (Baseline data available in 1991)

17.19 Increase to at least 75 percent the proportion of worksites with 50 or more employees that have a voluntarily established policy or program for the hiring of people with disabilities. (Baseline: 37 percent of medium and large companies in 1986)

Note: Voluntarily established policies and programs for the hiring of people with disabilities are encouraged for worksites of all sizes. This objective is limited to worksites with 50 or more employees for tracking purposes.

17.20 Increase to 50 the number of States that have service systems for children with or at risk of chronic and disabling conditions, as required by Public Law 101-239. (Baseline data available in 1991)

Note: Children with or at risk of chronic and disabling conditions, often referred to as children with special health care needs, include children with psychosocial as well as physical problems. This population encompasses children with a wide variety of actual or potential disabling conditions, including children with or at risk for cerebral palsy, mental retardation, sensory deprivation, developmental disabilities, spina bifida, hemophilia, other genetic disorders, and health-related educational and behavioral problems. Service systems for such children are organized networks of comprehensive, community-based, coordinated, and family-centered services.

18. HIV Infection

Health Status Objectives

18.1 Confine annual incidence of diagnosed AIIDS cases to no more than 98,000 cases. (Baseline: An estimated 44,000 to 50,000 diagnosed cases in 1989)

Special Population Targets

	Diagnosed AIDS Cases	*1989 Baseline*	*2000 Target*
18.1a	Gay and bisexual men	26,000-28,000	48,000
18.1b	Blacks	14,000-15,000	37,000
18.1c	Hispanics	7,000-8,000	18,000

Note: Targets for this objective are equal to upper bound estimates of the incidence of diagnosed AIDS cases projected for 1993.

18.2 Confine the prevalence of HIV infection to no more than 800 per 100,000 people. (Baseline: An estimated 400 per 100,000 in 1989)

Special Population Targets

	Estimated Prevalence of HIV Infection (per 100,000)	*1989 Baseline*	*2000 Target*
18.2a	Homosexual men	2,000-42,000[†]	20,000
18.2b	Intravenous drug abusers	30,000-40,000[‡]	40,000
18.2c	Women giving birth to live-born infants	150	100

[†] Per 100,000 homosexual men aged 15 through 24 based on men tested in selected sexually transmitted disease clinics in unlinked surveys; most studies find HIV prevalence of between 2,000 and 21,000 per 100,000

[‡] Per 100,000 intravenous drug abusers aged 15 through 24 in the New York city vicinity; in areas other than major metropolitan centers, infection rates in people entering selected drug treatment programs tested in unlinked surveys are often under 500 per 100,000

Risk Reduction Objectives

18.3* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

18.4* Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)

Special Population Targets

	Use of Condoms	*1988 Baseline*	*2000 Target*
18.4a	Sexually active young women aged 15-19 (by their partners)	26%	60%
18.4b	Sexually active young men aged 15-19	57%	75%
18.4c	Intravenous drug abusers	—	60%

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

18.5 Increase to at least 50 percent the estimated proportion of all intravenous drug abusers who are in drug abuse treatment programs. (Baseline: An estimated 11 percent of opiate abusers were in treatment in 1989)

18.6 Increase to at least 50 percent the estimated proportion of intravenous drug abusers not in treatment who use only uncontaminated drug paraphernalia ("works"). (Baseline: 25 to 35 percent of opiate abusers in 1989)

18.7 Reduce to no more than 1 per 250,000 units of blood and blood components the risk of transfusion-transmitted HIV infection. (Baseline: 1 per 40,000 to 150,000 units in 1989)

Services and Protection Objectives

18.8 Increase to at least 80 percent the proportion of HIV-infected people who have been tested for HIV infection. (Baseline: An estimated 15 percent of approximately 1,000,000 HIV-infected people had been tested at publicly funded clinics, in 1989)

18.9* Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)

Special Population Target

	Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
18.9a	Providers practicing in high incidence areas	—	90%

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

18.10 Increase to at least 95 percent the proportion of schools that have age-appropriate HIV education curricula for students in 4th through 12th grade, preferably as part of quality school health education. (Baseline: 66 percent of school districts required HIV education but only 5 percent required HIV education in each year for 7th through 12th grade in 1989)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

18.11 Provide HIV education for students and staff in at least 90 percent of colleges and universities. (Baseline data available in 1995)

18.12 Increase to at least 90 percent the proportion of cities with populations over 100,000 that have outreach programs to contact drug abusers (particularly intravenous drug abusers) to deliver HIV risk reduction messages. (Baseline data available in 1995)

Note: HIV risk reduction messages include messages about reducing or eliminating drug use, entering drug treatment, disinfection of injection equipment if still injecting drugs, and safer sex practices.

18.13* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

18.14 Extend to all facilities where workers are at risk for occupational transmission of HIV regulations to protect workers from exposure to bloodborne infections, including HIV infection. (Baseline data available in 1992)

Note: The Occupational Safety and Health Administration (OSHA) is expected to issue regulations requiring worker protection from exposure to bloodborne infections, including HIV, during 1991. Implementation of the OSHA regulations would satisfy this objective.

19. Sexually Transmitted Diseases

Health Status Objectives

19.1 Reduce gonorrhea to an incidence of no more than 225 cases per 100,000 people. (Baseline: 300 per 100,000 in 1989)

Special Population Targets

	Gonorrhea Incidence (per 100,000)	*1989 Baseline*	*2000 Target*
19.1a	Blacks	1,990	1,300
19.1b	Adolescents aged 15-19	1,123	750
19.1c	Women aged 15-44	501	290

19.2 Reduce *Chlamydia trachomatis* infections, as measured by a decrease in the incidence of nongonococcal urethritis to no more than 170 cases per 100,000 people. (Baseline: 215 per 100,000 in 1988)

19.3 Reduce primary and secondary syphilis to an incidence of no more than 10 cases per 100,000 people. (Baseline: 18.1 per 100,000 in 1989)

Special Population Target

	Primary and Secondary Syphilis Incidence (per 100,000)	*1989 Baseline*	*2000 Target*
19.3a	Blacks	118	65

19.4 Reduce congenital syphilis to an incidence of no more than 50 cases per 100,000 live births. (Baseline: 100 per 100,000 live births in 1989)

19.5 Reduce genital herpes and genital warts, as measured by a reduction to 142,000 and 385,000, respectively, in the annual number of first-time consultations with a physician for the conditions. (Baseline: 167,000 and 451,000 in 1988)

19.6 Reduce the incidence of pelvic inflammatory disease, as measured by a reduction in hospitalizations for pelvic inflammatory disease to no more than 250 per 100,000 women aged 15 through 44. (Baseline: 311 per 100,000 in 1988)

19.7* Reduce sexually transmitted hepatitis B infection to no more than 30,500 cases. (Baseline: 58,300 cases in 1988)

19.8 Reduce the rate of repeat gonorrhea infection to no more than 15 percent within the previous year. (Baseline: 20 percent in 1988)

Note: As measured by a reduction in the proportion of gonorrhea patients who, within the previous year, were treated for a separate case of gonorrhea.

Risk Reduction Objectives

19.9* Reduce the proportion of adolescents who have engaged in sexual intercourse to no more than 15 percent by age 15 and no more than 40 percent by age 17. (Baseline: 27 percent of girls and 33 percent of boys by age 15; 50 percent of girls and 66 percent of boys by age 17; reported in 1988)

19.10* Increase to at least 50 percent the proportion of sexually active, unmarried people who used a condom at last sexual intercourse. (Baseline: 19 percent of sexually active, unmarried women aged 15 through 44 reported that their partners used a condom at last sexual intercourse in 1988)

Special Population Targets

Use of Condoms	*1988 Baseline*	*2000 Target*
19.10a Sexually active young women aged 15-19 (by their partners)	25%	60%
19.10b Sexually active young men aged 15-19	57%	75%
19.10c Intravenous drug abusers	—	60%

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

Services and Protection Objectives

19.11* Increase to at least 50 percent the proportion of family planning clinics, maternal and child health clinics, sexually transmitted disease clinics, tuberculosis clinics, drug treatment centers, and primary care clinics that screen, diagnose, treat, counsel, and provide (or refer for) partner notification services for HIV infection and bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia). (Baseline: 40 percent of family planning clinics for bacterial sexually transmitted diseases in 1989)

19.12 Include instruction in sexually transmitted disease transmission prevention in the curricula of all middle and secondary schools, preferably as part of quality school health education. (Baseline: 95 percent of schools reported offering at least one class on sexually transmitted diseases as part of their standard curricula in 1988)

Note: Strategies to achieve this objective must be undertaken sensitively to avoid indirectly encouraging or condoning sexual activity among teens who are not yet sexually active.

19.13 Increase to at least 90 percent the proportion of primary care providers treating patients with sexually transmitted diseases who correctly manage cases, as measured by their use of appropriate types and amounts of therapy. (Baseline: 70 percent in 1988)

19.14* Increase to at least 75 percent the proportion of primary care and mental health care providers who provide age-appropriate counseling on the prevention of HIV and other sexually transmitted diseases. (Baseline: 10 percent of physicians reported that they regularly assessed the sexual behaviors of their patients in 1987)

Special Population Target

Counseling on HIV and STD Prevention	*1987 Baseline*	*2000 Target*
19.14a Providers practicing in high incidence areas	—	90%

Note: Primary care providers include physicians, nurses, nurse practitioners, and physician assistants. Areas of high AIDS and sexually transmitted disease incidence are cities and States with incidence rates of AIDS cases, HIV seroprevalence, gonorrhea, or syphilis that are at least 25 percent above the national average.

19.15 Increase to at least 50 percent the proportion of all patients with bacterial sexually transmitted diseases (gonorrhea, syphilis, and chlamydia) who are offered provider referral services. (Baseline: 20 percent of those treated in sexually transmitted disease clinics in 1988)

Note: Provider referral (previously called contact tracing) is the process whereby health department personnel directly notify the sexual partners of infected individuals of their exposure to an infected individual.

20. Immunization and Infectious Diseases

Health Status Objectives

20.1 Reduce indigenous cases of vaccine-preventable diseases as follows:

Disease	*1988 Baseline*	*2000 Target*
Diphtheria among people aged 25 and younger	1	0
Tetanus among people aged 25 and younger	3	0
Polio (wild-type virus)	0	0
Measles	3,058	0
Rubella	225	0
Congenital Rubella Syndrome	6	0
Mumps	4,866	500
Pertussis	3,450	1,000

20.2 Reduce epidemic-related pneumonia and influenza deaths among people aged 65 and older to no more than 7.3 per 100,000. (Baseline: Average of 9.1 per 100,000 during 1980 through 1987)

Note: Epidemic-related pneumonia and influenza deaths are those that occur above and beyond the normal yearly fluctuations of mortality. Because of the extreme variability in epidemic-related deaths from year to year, the target is a 3-year average.

20.3* Reduce viral hepatitis as follows:

(Per 100,000)	*1987 Baseline*	*2000 Target*
Hepatitis B (HBV)	63.5	40
Hepatitis A	31	23
Hepatitis C	18.3	13.7

Special Population Targets for HBV

	HBV Cases	*1987 Estimated Baseline*	*2000 Target*
20.3a	Intravenous drug abusers	30,000	22,500
20.3b	Heterosexually active people	33,000	22,000
20.3c	Homosexual men	25,300	8,500
20.3d	Children of Asians/Pacific Islanders	8,900	1,800
20.3e	Occupationally exposed workers	6,200	1,250
20.3f	Infants	3,500	550 new carriers
20.3g	Alaska Natives	15	1

20.4 Reduce tuberculosis to an incidence of no more than 3.5 cases per 100,000 people. (Baseline: 9.1 per 100,000 in 1988)

Special Population Targets

	Tuberculosis Cases (per 100,000)	*1988 Baseline*	*2000 Target*
20.4a	Asians/Pacific Islanders	36.3	15
20.4b	Blacks	28.3	10
20.4c	Hispanics	18.3	5
20.4d	American Indians/Alaska Natives	18.1	5

20.5 Reduce by at least 10 percent the incidence of surgical wound infections and nosocomial infections in intensive care patients. (Baseline data available in late 1990)

20.6 Reduce selected illness among international travelers as follows:

Incidence	*1987 Baseline*	*2000 Target*
Typhoid fever	280	140
Hepatitis A	1,280	640
Malaria	2,000	1,000

20.7 Reduce bacterial meningitis to no more than 4.7 cases per 100,000 people. (Baseline: 6.3 per 100,000 in 1986)

Special Population Target

	Bacterial Meningitis Cases (per 100,000)	*1987 Baseline*	*2000 Target*
20.7a	Alaska Natives	33	8

20.8 Reduce infectious diarrhea by at least 25 percent among children in licensed child care centers and children in programs that provide an Individualized Education Program (IEP) or Individualized Health Plan (IHP). (Baseline data available in 1992)

20.9 Reduce acute middle ear infections among children aged 4 and younger, as measured by days of restricted activity or school absenteeism, to no more than 105 days per 100 children. (Baseline: 131 days per 100 children in 1987)

20.10 Reduce pneumonia-related days of restricted activity as follows:

	1987 Baseline	*2000 Target*
People aged 65 and older (per 100 people)	48 days	38 days
Children aged 4 and younger (per 100 children)	27 days	24 days

Risk Reduction Objectives

20.11 Increase immunization levels as follows:

Basic immunization series among children under age 2: at least 90 percent. (Baseline: 70-80 percent estimated in 1989)

Basic immunization series among children in licensed child care facilities and kindergarten through post-secondary education institutions: at least 95 percent. (Baseline: For licensed child care, 94 percent; 97 percent for children entering school for the 1987-1988 school year; and for post-secondary institutions, baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among institutionalized chronically ill or older people: at least 80 percent. (Baseline data available in 1992)

Pneumococcal pneumonia and influenza immunization among noninstitutionalized, high-risk populations, as defined by the Immunization Practices Advisory Committee: at least 60 percent. (Baseline: 10 percent estimated for pneumococcal vaccine and 20 percent for influenza vaccine in 1985)

Hepatitis B immunization among high-risk populations, including infants of surface antigen-positive mothers to at least 90 percent; occupationally exposed workers to at least 90 percent; IV-drug users in drug treatment programs to at least 50 percent; and homosexual men to at least 50 percent. (Baseline data available in 1992)

20.12 Reduce postexposure rabies treatments to no more than 9,000 per year. (Baseline: 18,000 estimated treatments in 1987)

Services and Protection Objectives

20.13 Expand immunization laws for schools, preschools, and day care settings to all States for all antigens. (Baseline: 9 States and the District of Columbia in 1990)

20.14 Increase to at least 90 percent the proportion of primary care providers who provide information and counseling about immunizations and offer immunizations as appropriate for their patients. (Baseline data available in 1992)

20.15 Improve the financing and delivery of immunizations for children and adults so that virtually no American has a financial barrier to receiving recommended immunizations. (Baseline: Financial coverage for immunizations was included in 45 percent of employment-based insurance plans with conventional insurance plans; 62 percent with Preferred Provider Organization plans; and 98 percent with Health Maintenance Organization plans in 1989; Medicaid covered basic immunizations for eligible children and Medicare covered pneumococcal immunization for eligible older adults in 1990)

20.16 Increase to at least 90 percent the proportion of public health departments that provide adult immunization for influenza, pneumococcal disease, hepatitis B, tetanus, and diphtheria. (Baseline data available in 1991)

20.17 Increase to at least 90 percent the proportion of local health departments that have ongoing programs for actively identifying cases of tuberculosis and latent infection in populations at high risk for tuberculosis. (Baseline data available in 1991)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

20.18 Increase to at least 85 percent the proportion of people found to have tuberculosis infection who completed courses of preventive therapy. (Baseline: 89 health departments reported that 66.3 percent of 95,201 persons placed on preventive therapy completed their treatment in 1987)

20.19 Increase to at least 85 percent the proportion of tertiary care hospital laboratories and to at least 50 percent the proportion of secondary care hospital and health maintenance organization laboratories possessing technologies for rapid viral diagnosis of influenza. (Baseline data available in 1992)

21. Clinical Preventive Services

Health Status Objective

21.1* Increase years of healthy life to at least 65 years. (Baseline: An estimated 62 years in 1980)

Special Population Targets

	Years of Healthy Life	*1980 Baseline*	*2000 Target*
21.1a	Blacks	56	60
21.1b	Hispanics	62	65
21.1c	People aged 65 and older	12†	14†

†*Years of healthy life remaining at age 65*

Note: Years of healthy life (also referred to as quality-adjusted life years) is a summary measure of health that combines mortality (quantity of life) and morbidity and disability (quality of life) into a single measure. For people aged 65 and older, active life-expectancy, a related summary measure, also will be tracked.

Risk Reduction Objective

21.2 Increase to at least 50 percent the proportion of people who have received, as a minimum within the appropriate interval, all of the screening and immunization services and at least one of the counseling services appropriate for their age and gender as recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1991)

Special Population Targets

	Receipt of Recommended Services	*Baseline*	*2000 Target*
21.2a	Infants up to 24 months	—	90%
21.2b	Children aged 2-12	—	80%
21.2c	Adolescents aged 13-18	—	50%
21.2d	Adults aged 19-39	—	40%
21.2e	Adults aged 40-64	—	40%
21.2f	Adults aged 65 and older	—	40%
21.2g	Low-income people	—	50%
21.2h	Blacks	—	50%
21.2i	Hispanics	—	50%
21.2j	Asians/Pacific Islanders	—	50%
21.2k	American Indians/Alaska Natives	—	70%
21.2l	People with disabilities	—	80%

Services and Protection Objectives

21.3 Increase to at least 95 percent the proportion of people who have a specific source of ongoing primary care for coordination of their preventive and episodic health care. (Baseline: Less than 82 percent in 1986, as 18 percent reported having no physician, clinic, or hospital as a regular source of care)

Special Population Targets

	Percentage With Source of Care	*1986 Baseline*	*2000 Target*
21.3a	Hispanics	70%	95%
21.3b	Blacks	80%	95%
21.3c	Low-income people	80%	95%

21.4 Improve financing and delivery of clinical preventive services so that virtually no American has a financial barrier to receiving, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

21.5 Assure that at least 90 percent of people for whom primary care services are provided directly by publicly funded programs are offered, at a minimum, the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

Note: Publicly funded programs that provide primary care services directly include federally funded programs such as the Maternal and Child Health Program, Community and Migrant Health Centers, and the Indian Health Service as well as primary care service settings funded by State and local governments. This objective does not include services covered indirectly through the Medicare and Medicaid programs.

21.6 Increase to at least 50 percent the proportion of primary care providers who provide their patients with the screening, counseling, and immunization services recommended by the U.S. Preventive Services Task Force. (Baseline data available in 1992)

21.7 Increase to at least 90 percent the proportion of people who are served by a local health department that assesses and assures access to essential clinical preventive services. (Baseline data available in 1992)

Note: Local health department refers to any local component of the public health system, defined as an administrative and service unit of local or State government concerned with health and carrying some responsibility for the health of a jurisdiction smaller than a State.

21.8 Increase the proportion of all degrees in the health professions and allied and associated health profession fields awarded to members of underrepresented racial and ethnic minority groups as follows:

Degrees Awarded To:	*1985-86 Baseline*	*2000 Target*
Blacks	5%	8%
Hispanics	3%	6.4%
American Indians/Alaska Natives	0.3%	0.6%

Note: Underrepresented minorities are those groups consistently below parity in most health profession schools—blacks, Hispanics, and American Indians and Alaska Natives.

22. Surveillance and Data Systems

Objectives

22.1 Develop a set of health status indicators appropriate for Federal, State, and local health agencies and establish use of the set in at least 40 States. (Baseline: No such set exists in 1990)

22.2 Identify, and create where necessary, national data sources to measure progress toward each of the year 2000 national health objectives. (Baseline: 77 percent of the objectives have baseline data in 1990)

Type-Specific Target

		1989 Baseline	*2000 Target*
22.2a	State level data for at least two-thirds of the objectives	23 States[†]	35 States

[†] *Measured using the 1989 Draft Year 2000 National Health Objectives*

22.3 Develop and disseminate among Federal, State, and local agencies procedures for collecting comparable data for each of the year 2000 national health objectives and incorporate these into Public Health Service data collection systems. (Baseline: Although such surveys as the National Health Interview Survey may serve as a model, widely accepted procedures do not exist in 1990)

22.4 Develop and implement a national process to identify significant gaps in the Nation's disease prevention and health promotion data, including data for racial and ethnic minorities, people with low incomes, and people with disabilities, and establish mechanisms to meet these needs. (Baseline: No such process exists in 1990)

Note: Disease prevention and health promotion data includes disease status, risk factors, and services receipt data. Public health problems include such issue areas as HIV infection, domestic violence, mental health, environmental health, occupational health, and disabling conditions.

22.5 Implement in all States periodic analysis and publication of data needed to measure progress toward objectives for at least 10 of the priority areas of the national health objectives. (Baseline: 20 States reported that they disseminate the analyses they use to assess State progress toward the health objectives to the public and to health professionals in 1989)

Type-Specific Target	*1989 Baseline*	*2000 Target*
22.5a Periodic analysis and publication of State progress toward the national objectives for each racial or ethnic group that makes up at least 10 percent of the State population	—	25 States

Note: Periodic is at least once every 3 years. Objectives include, at a minimum, one from each objectives category: health status, risk reduction, and services and protection.

22.6 Expand in all States systems for the transfer of health information related to the national health objectives among Federal, State, and local agencies. (Baseline: 30 States reported that they have some capability for transfer of health data, tables, graphs, and maps to Federal, State, and local agencies that collect and analyze data in 1989)

Note: Information related to the national health objectives includes State and national level baseline data, disease prevention/health promotion evaluation results, and data generated to measure progress.

22.7 Achieve timely release of national surveillance and survey data needed by health professionals and agencies to measure progress toward the national health objectives. (Baseline data available in 1993)

Note: Timely release (publication of provisional or final data or public use data tapes) should be based on the use of the data, but is at least within one year of the end of data collection.

Age-Related Objectives

*Reduce the death rate for children by 15 percent to no more than 28 per 100,000 children aged 1 through 14, and for infants by approximately 30 percent to no more than 7 per 1,000 live births. (Baseline: 33 per 100,000 for children in 1987 and 10.1 per 1,000 live births for infants in 1987)

Reduce the death rate for adolescents and young adults by 15 percent to no more than 85 per 100,000 people aged 15 through 24. (Baseline: 99.4 per 100,000 in 1987)

Reduce the death rate for adults by 20 percent to no more than 340 per 100,000 people aged 25 through 64. (Baseline: 423 per 100,000 in 1987)

*Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 and older who have difficulty in performing two or more personal care activities (a reduction of about 19 percent), thereby preserving independence. (Baseline: 111 per 1,000 in 1984-85)

B. Contributors to *Healthy People 2000*

Healthy People 2000: National Health Promotion and Disease Prevention Objectives is the product of a national effort that has involved professionals and citizens, private organizations and public agencies from every part of the Nation. Work on the report began in 1987 with the formation of the Healthy People 2000 Consortium and the convening of public hearings across the country. Testimony from the public hearings became the primary resource material for working groups of professionals to use in crafting the health objectives themselves. After extensive public review and comment, involving more than 10,000 people, the objectives were refined and revised to produce the report.

Preparation of the report was sponsored by the U.S. Public Health Service, through a project coordinated by the Deputy Assistant Secretary for Health (Disease Prevention and Health Promotion). Project management was facilitated by the work of the PHS Steering Committee on the Healthy People 2000 Objectives; the Committee on Health Objectives for the Year 2000, Institute of Medicine, National Academy of Sciences; and the Secretary's Council on Health Promotion and Disease Prevention. Principal staff and editorial responsibility for the project was carried out by James A. Harrell, Lynn M. Artz, Ashley Files, and David Baker. Other staff from the Office of Disease Prevention and Health Promotion helping in the coordination and development of the overall project included Barbara Anderson, John Bailar, Amber Barnato, Sandra Buesking, Mary Jo Deering, Christopher DeGraw, Olga Emgushov, Martha G. Frazier, Toni M. Goodwin, Linda M. Harris, Douglas B. Kamerow, Thomas Kim, Loretta M. Logan, Patricia Lynch, Caroline McNeil, Linda D. Meyers, Diane Rittenhouse, Marilyn K. Schulenberg, Sara L. White, Jennifer Woods, Christina Wypijewski, Michael Yao, and Daniel Yarano.

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Healthy People 2000 Consortium

National Organizations

Academy of General Dentistry
Aerobics and Fitness Association of America
Alcohol and Drug Problems Association of North America
Alliance for Aging Research
Alliance for Health
Amateur Athletic Union of the United States
American Academy of Child and Adolescent Psychiatry
American Academy of Family Physicians
American Academy of Ophthalmology
American Academy of Orthopaedic Surgeons
American Academy of Pediatric Dentistry
American Academy of Pediatrics

American Alliance for Health, Physical Education, Recreation, and Dance
American Art Therapy Association
American Association for Clinical Chemistry
American Association for Dental Research
American Association for Marriage and Family Therapy
American Association for Respiratory Care
American Association for the Advancement of Science
American Association of Certified Orthoptists
American Association of Colleges of Osteopathic Medicine
American Association of Colleges of Pharmacy
American Association of Dental Schools
American Association of Homes for the Aging
American Association of Occupational Health Nurses
American Association of Pathologists' Assistants
American Association of Public Health Dentistry
American Association of Public Health Physicians
American Association of Retired Persons
American Association of School Administrators
American Association of Suicidology
American Association of University Affiliated Programs for Persons with Developmental Disabilities
American Association on Mental Retardation
American Cancer Society
American College Health Association
American College of Cardiology
American College of Clinical Pharmacy
American College of Health Care Administrators
American College of Healthcare Executives
American College of Nurse-Midwives
American College of Nutrition
American College of Obstetricians and Gynecologists
American College of Occupational Medicine
American College of Physicians
American College of Preventive Medicine
American College of Radiology
American College of Sports Medicine
American Council on Alcoholism
American Dental Association
American Dental Hygienists' Association
American Diabetes Association
American Dietetic Association
American Federation of Teachers
American Geriatrics Society
American Heart Association
American Home Economics Association
American Hospital Association
American Indian Health Care Association
American Institute for Preventive Medicine
American Institute of Nutrition
American Kinesiotherapy Association
American Lung Association
American Meat Institute
American Medical Association
American Medical Student Association
American Nurses' Association
American Nutritionists Association
American Occupational Therapy Association
American Optometric Association
American Orthopaedic Society for Sports Medicine
American Osteopathic Academy of Sports Medicine
American Osteopathic Association
American Osteopathic Hospital Association
American Pharmaceutical Association
American Physical Therapy Association
American Physiological Society
American Podiatric Medical Association
American Psychiatric Association
American Psychiatric Nurses Association
American Psychological Association
American Public Health Association
American Red Cross
American Rehabilitation Counseling Association
American School Food Service Association
American School Health Association
American Social Health Association
American Society for Clinical Nutrition
American Society for Microbiology
American Society for Parenteral and Enteral Nutrition
American Society for Psycoprophylaxis in Obstetrics
American Society of Acupuncture
American Society of Addiction Medicine
American Society of Allied Health Professions
American Society of Hospital Pharmacists
American Society of Human Genetics
American Society of Ocularists
American Speech-Language-Hearing Association
American Spinal Injury Association
American Statistical Association
American Thoracic Society
Arthritis Foundation
Asian American Health Forum
Association for Applied Psychophysiology and Biofeedback
Association for Fitness in Business
Association for Hospital Medical Education
Association for Practitioners in Infection Control
Association for Retarded Citizens of the United States
Association for the Advancement of Automotive Medicine
Association for the Advancement of Health Education
Association for Vital Records and Health Statistics
Association of Academic Health Centers
Association of American Indian Physicians
Association of American Medical Colleges
Association of Clinical Scientists

Association of Community Health Nursing Educators
Association of Food and Drug Officials
Association of Maternal and Child Health Programs
Association of Pediatric Oncology Nurses
Association of Rehabilitation Nurses
Association of Schools of Public Health
Association of State and Territorial Dental Directors
Association of State and Territorial Directors of Nursing
Association of State and Territorial Directors of Public Health Education
Association of State and Territorial Health Officials
Association of State and Territorial Public Health Laboratory Directors
Association of State and Territorial Public Health Nutrition Directors
Association of State and Territorial Public Health Social Work
Association of Teachers of Preventive Medicine
Association of Technical Personnel in Ophthalmology
Black Congress on Health, Law, and Economics
Blue Cross and Blue Shield Association
Boys Scouts of America
Business Roundtable
Camp Fire
Cardiovascular Credentialing International/National Board of Cardiovascular Technology
Catholic Health Association of the United States
Children's Hospital National Medical Center
College of American Pathologists
Council for Responsible Nutrition
Council of Medical Specialty Societies
Dairy and Food Nutrition Council of the Southeast
Emergency Nurses Association
Eye Bank Association of America
Federation of American Societies for Experimental Biology
Federation of Nurses and Health Professionals
Food Marketing Institute
Future Homemakers of America
Gerontological Society of America
Girl Scouts of the United States of America
Great Lakes Association of Clinical Medicine
Grocery Manufacturers of America
Group Health Association of America
Health Industry Manufacturers Association
Health Insurance Association of America
Highway Users Federation for Safety and Mobility
Institute of Food Technologists
International Association for Enterostomal Therapy
International Lactation Consultant Association
International Life Sciences Institute
International Patient Education Council
La Leche League International
Learning Disabilities Association of America
March of Dimes Birth Defects Foundation
Maternal and Child Health Network
Maternity Center Association
Midwives' Alliance of North America
Migrant Clinicians Network
Mothers Against Drunk Driving
NAACOG—The Organization of Obstetric, Gynecologic, and Neonatal Nurses
NARD—formerly National Association of Retail Druggists
National AIDS Network
National Alliance for the Mentally Ill
National Alliance of Black School Educators
National Alliance of Nurse Practitioners
National Association for Hispanic Elderly
National Association for Home Care
National Association for Human Development
National Association for Music Therapy
National Association for Sport and Physical Education
National Association of Biology Teachers
National Association of Childbearing Centers
National Association of Community Health Centers
National Association of Counties
National Association of County Health Officials
National Association of Elementary School Principals
National Association of Governors Councils on Physical Fitness and Sports
National Association of Neonatal Nurses
National Association of Optometrists and Opticians
National Association of Pediatric Nurse Associates and Practitioners
National Association of RSVP Directors
National Association of School Nurses
National Association of Secondary School Principals
National Association of Social Workers
National Association of State Alcohol and Drug Abuse Directors
National Association of State Boards of Education
National Association of State NET Program Coordinators
National Association of State School Nursing Consultants
National Black Nurses Association
National Board of Medical Examiners
National Center for Health Education
National Coalition of Hispanic Health and Human Services Organization
National Commission Against Drunk Driving
National Committee for Adoption
National Committee for Prevention of Child Abuse
National Conference of State Legislatures
National Consumers League
National Council for International Health
National Council for the Education of Health Professionals in Health Promotion
National Council on Alcoholism and Drug Dependence

National Council on Disability
National Council on Health Laboratory Services
National Council on Patient Information and Education
National Council on Self-Help and Public Health
National Council on the Aging
National Dairy Council
National Environmental Health Association
National Extension Homemakers Council
National Family Planning and Reproductive Health Association
National Federation of State High School Associations
National Food Processors Association
National Head Injury Foundation
National Health Council
National Health Lawyers Association
National Hearing Aid Society
National Institute for Fitness and Sport
National Kidney Foundation
National League for Nursing
National Lesbian and Gay Health Foundation
National Medical Association
National Mental Health Association
National Museum of Health and Medicine
National Nurses Society on Addictions
National Organization for Women
National Organization on Adolescent Pregnancy and Parenting
National Osteoporosis Foundation
National Pest Control Association
National Pressure Ulcer Advisory Panel
National PTA
National Recreation and Park Association
National Safety Council
National School Boards Association
National Society of Allied Health
National Society to Prevent Blindness
National Strength and Conditioning Association
National Stroke Association
National Wellness Institute
National Women's Health Network
NEA Health Information Network
Nursing Network on Violence Against Women
Oncology Nursing Society
Paralyzed Veterans of America
People's Medical Society
Pharmaceutical Manufacturers Association
Planned Parenthood Federation of America
Population Association of America
Produce Marketing Association
Salt Institute
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Society of Prospective Medicine
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United States Conference of Mayors
United Way of America
Visiting Nurse Associations of America
Voluntary Hospitals of America
Washington Business Group on Health
Wellness Councils of America—WELCOA
Western Consortium for Public Health
Women's Sports Foundation

State and Territorial Health Departments

Alabama
Alaska
American Samoa
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
District of Columbia
Florida
Georgia
Guam
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Puerto Rico
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

C. Priority Area Lead Agencies

1.	Physical Activity and Fitness	President's Council on Physical Fitness and Sports
2.	Nutrition	National Institutes of Health Food and Drug Administration
3.	Tobacco	Centers for Disease Control
4.	Alcohol and Other Drugs	Alcohol, Drug Abuse, and Mental Health Administration
5.	Family Planning	Office of Population Affairs
6.	Mental Health and Mental Disorders	Alcohol, Drug Abuse, and Mental Health Administration
7.	Violent and Abusive Behavior	Centers for Disease Control
8.	Educational and Community-Based Programs	Centers for Disease Control Health Resources and Services Administration
9.	Unintentional Injuries	Centers for Disease Control
10.	Occupational Safety and Health	Centers for Disease Control
11.	Environmental Health	National Institutes of Health Centers for Disease Control
12.	Food and Drug Safety	Food and Drug Administration
13.	Oral Health	National Institutes of Health Centers for Disease Control
14.	Maternal and Infant Health	Health Resources and Services Administration
15.	Heart Disease and Stroke	National Institutes of Health
16.	Cancer	National Institutes of Health
17.	Diabetes and Chronic Disabling Conditions	National Institutes of Health Centers for Disease Control
18.	HIV Infection	National AIDS Program Office
19.	Sexually Transmitted Diseases	Centers for Disease Control
20.	Immunization and Infectious Diseases	Centers for Disease Control
21.	Clinical Preventive Services	Health Resources and Services Administration Centers for Disease Control
22.	Surveillance and Data Systems	Centers for Disease Control

D. Healthy People 2000: Mortality Objectives Technical Appendix

Identifying Codes and Crude Baseline Rates

Obj. No.	*Cause of Death*	*ICD-9 or Other Identifying Codes*	*Crude Rate per 100,000 (1987)*
1.1	Coronary heart disease	410-414, 402, 429.2	249
2.1	Coronary heart disease	410-414, 402, 429.2	249
2.2	Cancer (all sites)	140-208	196
3.1	Coronary heart disease	410-414, 402, 429.2	249
3.2	Lung cancer	162.2-162.9	53.4
3.3	Chronic obstructive pulmonary disease	490-496	32.2
4.1	Alcohol-related motor vehicle crashes	E810-E819	9.7
4.2	Cirrhosis	571	10.8
4.3	Drug-related deaths	292, 304, 305.2-305.9, E850-E858, E950-E950.5, E962.0, E980.0-E980.5	4.0
6.1	Suicide	E950-E959	12.7
7.1	Homicide	E960-E969	8.6
7.2	Suicide	E950-E959	12.7
7.3	Firearm injuries	E922.0-E922.3, E922.8-E922.9, E955.0-E955.4, E965.0-E965.4, E970, E985.0-E985.4	13.5
9.1	Unintentional injuries	E800-E949	39.0
9.3	Motor vehicle crashes	E810-E825	19.8
9.4	Falls and fall-related injuries	E880-E888	4.8
9.5	Drowning	E830, E832, E910	2.1
9.6	Residential fires	E890-E899	1.8
13.7	Cancer of the oral cavity and pharynx, for men and women aged 45-74	140-149	12.1 (men) 4.1 (women)
14.3	Maternal mortality	630-676	6.6[†]
15.1	Coronary heart disease	410-414, 402, 429.2	249
15.2	Stroke	430-438	61.6
16.1	Cancer (all sites)	140-208	196
16.2	Lung cancer	162.2-162.9	53.4
16.3	Breast cancer in women	174	32.7
16.4	Cervical cancer (in women)	180	3.5
16.5	Colorectal cancer	153.0-154.3, 154.8, 159.0	23.5
17.9	Diabetes-related deaths	250	63[‡]
20.2	Epidemic-related pneumonia and influenza deaths	480-487	28.4

[†] *Rate per 100,000 live births*

[‡] *1986*

E. Recommendations of the U.S. Preventive Services Task Force

Introduction

The U.S. Department of Health and Human Services convened the U.S. Preventive Services Task Force in 1984. The mandate of this 20-member, non-Federal, multidisciplinary expert panel was to evaluate the effectiveness of clinical preventive services—screening tests, counseling interventions, immunizations, and chemoprophylactic regimens—based on a systematic review of scientific evidence in published clinical research. Over a period of 5 years, the Task Force studied the evidence for 169 preventive interventions, reviewing about 2,500 relevant clinical trials and other epidemiologic studies. The 481-page report of the Task Force, the *Guide to Clinical Preventive Services*, was published in 1989.[1] This appendix presents an overview of the Task Force methodology and a brief summary of the recommendations found in the *Guide*.

Methodology

The task force adopted a structured methodology for reviewing the evidence and developing clinical practice recommendations, drawing on the experience and prior example of a similar effort undertaken by the Canadian Task Force on the Periodic Health Examination.[2] Recommendations were based almost entirely on the quality of the scientific evidence. The reader is referred to the *Guide to Clinical Preventive Services* for details about this methodology.

The recommendations summarized in this appendix apply only to *asymptomatic* persons who have no clinical evidence of the target condition. Thus, recommendations against the routine performance of a screening test would not necessarily apply to patients with suspicious signs or symptoms, a history of the target condition, or known risk factors for the disease. Also, the recommendations apply only to activities in the clinical setting. They should not be extrapolated for use in other activities, such as in shopping center health screening booths, public education campaigns, or legislative or regulatory actions.

Tables

The preventive services recommended by the Task Force for inclusion in the periodic health examination (PHE) are summarized in this appendix in eight tables, organized by age group. The reader should refer to appropriate chapters in the *Guide to Clinical Preventive Services* to obtain more detailed information about the proper indications for specific preventive services and the rationale for these recommendations than can be provided in these tables. The preventive services listed reflect only those topics evaluated by the Task Force.

The tables are provided for general guidance. Clinicians should use individual judgment to determine what is most appropriate for each patient, and they may wish to add other preventive services to this list. The patient's medical history, risk factors, and other individual circumstances must be considered in designing an appropriate PHE for each patient. Since the evaluations were defined by specific preventive services, general procedures such as the medical history and the physical examination were not examined in their entirety.

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A frequency schedule for periodic health visits is recommended in each table. These intervals are considered clinically prudent; however, scientific data are lacking to determine the optimal frequency for such visits. Clinicians should exercise discretion in selecting an appropriate schedule, especially for patients with abnormal signs or symptoms and those with chronic illnesses. The preventive services listed in each table are not necessarily recommended at every periodic visit. For example, although thyroid function tests may be clinically prudent in elderly women, they are not recommended annually even though periodic visits in this age group are recommended once a year.

Many of the preventive services in the tables are recommended only for members of high-risk groups and are not considered appropriate in the routine examination of all persons in the age group. This is due to differences in disease risk among individuals in different risk categories and the effectiveness of some preventive services in only certain populations. The specific risk groups for which the maneuver is considered appropriate are identified by an annotated high-risk (HR) code accompanying each table. The reader should refer to appropriate chapters in the *Guide to Clinical Preventive Services* for more detailed criteria to help identify individuals at increased risk. Risk factors that are especially important for clinicians to identify at an early stage but that are not considered appropriate for routine screening are listed under the heading *Remain Alert For*. Many of the disorders appearing under this heading are often overlooked by clinicians due to failure to recognize suggestive signs or symptoms or the importance of early identification.

References

[1] U.S. Preventive Services Task Force. *Guide to Clinical Preventive Services*. Baltimore, Md: Williams & Wilkins, 1989.

[2] Canadian Task Force on the Periodic Health Examination. The periodic health examination. Can Med Assoc J 1979; 121:1194-254

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Table 1. Birth to 18 Months

HR1 Infants with a family history of childhood hearing impairment or a personal history of congenital perinatal infection with herpes, syphilis, rubella, cytomegalovirus, or toxoplasmosis; malformations involving the head or neck (e.g., dysmorphic and syndromal abnormalities, cleft palate, abnormal pinna); birthweight below 1500 g; bacterial meningitis; hyperbilirubinemia requiring exchange transfusion; or severe perinatal asphyxia (Apgar scores of 0–3, absence of spontaneous respirations for 10 minutes, or hypotonia at 2 hours of age).

HR2 Infants who live in or frequently visit housing built before 1950 that is dilapidated or undergoing renovation; who come in contact with other children with known lead toxicity; who live near lead processing plants or whose parents or household members work in a lead-related occupation; or who live near busy highways or hazardous waste sites.

HR3 Infants living in areas with inadequate water fluoridation (less than 0.7 parts per million).

HR4 Newborns of Caribbean, Latin American, Asian, Mediterranean, or African descent.

Table 1.
Birth to 18 Months
Schedule: 2, 4, 6, 15, 18 Months*

Leading Causes of Death:

Conditions originating in perinatal period
Congenital anomalies
Heart disease
Injuries (nonmotor vehicle)
Pneumonia/influenza

SCREENING

Height and weight
Hemoglobin and hematocrit[1]
HIGH-RISK GROUPS
  Hearing[2] (HR1)
  Erythrocyte protoporphyrin (HR2)

This list of preventive services is not exhaustive. It reflects only those topics reviewed by the U.S. Preventive Services Task Force. Clinicians may wish to add other preventive services on a routine basis, and after considering the patient's medical history and other individual circumstances. Examples of target conditions not specifically examined by the Task Force include:

- Developmental disorders
- Musculoskeletal malformations
- Cardiac anomalies
- Genitourinary disorders
- Metabolic disorders
- Speech problems
- Behavioral disorders
- Parent/family dysfunction

PARENT COUNSELING

Diet

Breastfeeding
Nutrient intake, especially iron-rich foods

Injury Prevention

Child safety seats
Smoke detector
Hot water heater temperature
Stairway gates, window guards, pool fence
Storage of drugs and toxic chemicals
Syrup of ipecac, poison control telephone number

Dental Health

Baby bottle tooth decay

Other Primary Preventive Measures

Effects of passive smoking

IMMUNIZATIONS & CHEMOPROPHYLAXIS

Diphtheria-tetanus-pertussis (DTP) vaccine[3]
Oral poliovirus vaccine (OPV)[4]
Measles-mumps-rubella (MMR) vaccine[5]
Haemophilus influenzae type b (Hib) conjugate vaccine[6]
HIGH-RISK GROUPS
  Fluoride supplements (HR3)

FIRST WEEK

Ophthalmic antibiotics[7]
Hemoglobin electrophoresis (HR4)[7]
T4/TSH[8]
Phenylalanine[8]
Hearing (HR1)

Remain Alert For:

Ocular misalignment
Tooth decay
Signs of child abuse or neglect

*Five visits are required for immunizations. Because of lack of data and differing patient risk profiles, the scheduling of additional visits and the frequency of the individual preventive services listed in this table are left to clinical discretion (except as indicated in other footnotes).

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1. Once during infancy. 2. At age 18-month visit, if not tested earlier. 3. At ages 2, 4, 6, and 15 months. 4. At ages 2, 4, and 15 months. 5. At age 15 months. 6. At age 18 months. 7. At birth. 8. Days 3 to 6 preferred for testing.

Table 2. Ages 2–6 High-Risk Categories

HR1 Children who live in or frequently visit housing built before 1950 that is dilapidated or undergoing renovation; who come in contact with other children with known lead toxicity; who live near lead processing plants or whose parents or household members work in a lead-related occupation; or who live near busy highways or hazardous waste sites.

HR2 Household members of persons with tuberculosis or others at risk for close contact with the disease; recent immigrants or refugees from countries in which tuberculosis is common (e.g., Asia, Africa, Central and South America, Pacific Islands); family members of migrant workers; residents of homeless shelters; or persons with certain underlying medical disorders.

HR3 Children with a family history of childhood hearing impairment or a personal history of congenital perinatal infection with herpes, syphilis, rubella, cytomegalovirus, or toxoplasmosis; malformations involving the head or neck (e.g., dysmorphic and syndromal abnormalities, cleft palate, abnormal pinna); birthweight below 1500 g; bacterial meningitis; hyperbilirubinemia requiring exchange transfusion; or severe perinatal asphyxia (Apgar scores of 0–3, absence of spontaneous respirations for 10 minutes, or hypotonia at 2 hours of age).

HR4 Children with increased exposure to sunlight.

HR5 Children living in areas with inadequate water fluoridation (less than 0.7 parts per million).

Table 2.
Ages 2–6
Schedule: See Footnote*

Leading Causes of Death:
Injuries (nonmotor vehicle)
Motor vehicle crashes
Congenital anomalies
Homicide
Heart disease

SCREENING

- Height and weight
- Blood pressure
- Eye exam for amblyopia and strabismus[1]
- Urinalysis for bacteriuria

HIGH-RISK GROUPS
  - Erythrocyte protoporphyrin[2] (HR1)
  - Tuberculin skin test (PPD) (HR2)
  - Hearing[3] (HR3)

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- Developmental disorders
- Speech problems
- Behavioral and learning disorders
- Parent/family dysfunction

PATIENT & PARENT COUNSELING

Diet and Exercise
- Sweets and between-meal snacks, iron-enriched foods, sodium
- Caloric balance
- Selection of exercise program

Injury Prevention
- Safety belts
- Smoke detector
- Hot water heater temperature
- Window guards and pool fence
- Bicycle safety helmets
- Storage of drugs, toxic chemicals, matches, and firearms
- Syrup of ipecac, poison control telephone number

Dental Health
- Tooth brushing and dental visits

Other Primary Preventive Measures
- Effects of passive smoking

HIGH-RISK GROUPS
  - Skin protection from ultraviolet light (HR4)

IMMUNIZATIONS & CHEMOPROPHYLAXIS

- Diphtheria-tetanus-pertussis (DTP) vaccine[4]
- Oral poliovirus vaccine (OPV)[4]

HIGH-RISK GROUPS
  - Fluoride supplements (HR5)

Remain Alert For:
- Vision disorders
- Dental decay, malalignment, premature loss of teeth, mouth breathing
- Signs of child abuse or neglect
- Abnormal bereavement

*One visit is required for immunizations. Because of lack of data and differing patient risk profiles, the scheduling of additional visits and the frequency of the individual preventive services listed in this table are left to clinical discretion (except as indicated in other footnotes).

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1. Ages 3–4. 2. Annually. 3. Before age 3, if not tested earlier. 4. Once between ages 4 and 6.

HR1 Household members of persons with tuberculosis or others at risk for close contact with the disease; recent immigrants or refugees from countries in which tuberculosis is common (e.g., Asia, Africa, Central and South America, Pacific Islands); family members of migrant workers; residents of homeless shelters; or persons with certain underlying medical disorders.

HR2 Children with increased exposure to sunlight.

HR3 Children living in areas with inadequate water fluoridation (less than 0.7 parts per million).

Table 3.

Ages 7–12

Schedule: See Footnote*

Leading Causes of Death:

- Motor vehicle crashes
- Injuries (nonmotor vehicle)
- Congenital anomalies
- Leukemia
- Homicide
- Heart disease

SCREENING

- Height and weight
- Blood pressure

HIGH-RISK GROUPS

- Tuberculin skin test (PPD) (HR1)

This list of preventive services is not exhaustive. It reflects only those topics reviewed by the U.S. Preventive Services Task Force. Clinicians may wish to add other preventive services on a routine basis, and after considering the patient's medical history and other individual circumstances. Examples of target conditions not specifically examined by the Task Force include:

- Developmental disorders
- Scoliosis
- Behavioral and learning disorders
- Parent/family dysfunction

PATIENT & PARENT COUNSELING

Diet and Exercise

- Fat (especially saturated fat), cholesterol, sweets and between-meal snacks, sodium
- Caloric balance
- Selection of exercise program

Injury Prevention

- Safety belts
- Smoke detector
- Storage of firearms, drugs, toxic chemicals, matches
- Bicycle safety helmets

Dental Health

- Regular tooth brushing and dental visits

Other Primary Preventive Measures

HIGH-RISK GROUPS

- Skin protection from ultraviolet light (HR2)

CHEMOPROPHYLAXIS

HIGH-RISK GROUPS

- Fluoride supplements (HR3)

Remain Alert For:

- Vision disorders
- Diminished hearing
- Dental decay, malalignment, mouth breathing
- Signs of child abuse or neglect
- Abnormal bereavement

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*Because of lack of data and differing patient risk profiles, the scheduling of visits and the frequency of the individual preventive services listed in this table are left to clinical discretion.

Table 4. Ages 13–18

HR1 Persons with increased recreational or occupational exposure to sunlight, a family or personal history of skin cancer, or clinical evidence of precursor lesions (e.g., dysplastic nevi, certain congenital nevi).

HR2 Males with a history of cryptorchidism, orchiopexy, or testicular atrophy.

HR3 Females of childbearing age lacking evidence of immunity.

HR4 Persons who engage in sex with multiple partners in areas in which syphilis is prevalent, prostitutes, or contacts of persons with active syphilis.

HR5 Persons who attend clinics for sexually transmitted diseases; attend other high-risk health care facilities (e.g., adolescent and family planning clinics); or have other risk factors for chlamydial infection (e.g., multiple sexual partners or a sexual partner with multiple sexual contacts).

HR6 Persons with multiple sexual partners or a sexual partner with multiple contacts, sexual contacts of persons with culture-proven gonorrhea, or persons with a history of repeated episodes of gonorrhea.

HR7 Persons seeking treatment for sexually transmitted diseases; homosexual and bisexual men; past or present intravenous (IV) drug users; persons with a history of prostitution or multiple sexual partners; women whose past or present sexual partners were HIV-infected, bisexual, or IV drug users; persons with long-term residence or birth in an area with high prevalence of HIV infection; or persons with a history of transfusion between 1978 and 1985.

HR8 Household members of persons with tuberculosis or others at risk for close contact with the disease; recent immigrants or refugees from countries in which tuberculosis is common (e.g., Asia, Africa, Central and South America, Pacific Islands); migrant workers; residents of correctional institutions or homeless shelters; or persons with certain underlying medical disorders.

HR9 Persons exposed regularly to excessive noise in recreational or other settings.

HR10 Females who are sexually active or (if the sexual history is thought to be unreliable) aged 18 or older.

HR11 Recent divorce, separation, unemployment, depression, alcohol or other drug abuse, serious medical illnesses, living alone, or recent bereavement.

HR12 Intravenous drug users.

HR13 Persons of Caribbean, Latin American, Asian, Mediterranean, or African descent.

HR14 Persons with increased exposure to sunlight.

HR15 Persons living in areas with inadequate water fluoridation (less than 0.7 parts per million).

Table 4.

Ages 13–18

Schedule: See Footnote*

Leading Causes of Death:

- Motor vehicle crashes
- Homicide
- Suicide
- Injuries (nonmotor vehicle)
- Heart disease

SCREENING

History

- Dietary intake
- Physical activity
- Tobacco/alcohol/drug use
- Sexual practices

Physical Exam

- Height and weight
- Blood pressure

HIGH-RISK GROUPS

- Complete skin exam (HR1)
- Clinical testicular exam (HR2)

Laboratory/Diagnostic Procedures

HIGH-RISK GROUPS

- Rubella antibodies (HR3)
- VDRL/RPR (HR4)
- Chlamydial testing (HR5)
- Gonorrhea culture (HR6)
- Counseling and testing for HIV (HR7)
- Tuberculin skin test (PPD) (HR8)
- Hearing (HR9)
- Papanicolaou smear (HR10)[1]

COUNSELING

Diet and Exercise

- Fat (especially saturated fat), cholesterol, sodium, iron,[2] calcium[2]
- Caloric balance
- Selection of exercise program

Substance Use

- Tobacco: cessation/primary prevention
- Alcohol and other drugs: cessation/primary prevention
  - Driving/other dangerous activities while under the influence
  - Treatment for abuse

HIGH-RISK GROUPS

- Sharing/using unsterilized needles and syringes (HR12)

Sexual Practices

- Sexual development and behavior[3]
- Sexually transmitted diseases: partner selection, condoms
- Unintended pregnancy and contraceptive options

Injury Prevention

- Safety belts
- Safety helmets
- Violent behavior[4]
- Firearms[4]
- Smoke detector

Dental Health

- Regular tooth brushing, flossing, dental visits

Other Primary Preventive Measures

HIGH-RISK GROUPS

- Discussion of hemoglobin testing (HR13)
- Skin protection from ultraviolet light (HR14)

IMMUNIZATIONS & CHEMOPROPHYLAXIS

- Tetanus-diphtheria (Td) booster[5]

HIGH-RISK GROUPS

- Fluoride supplements (HR15)

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- Developmental disorders
- Scoliosis
- Behavioral and learning disorders
- Parent/family dysfunction

Remain Alert For:

- Depressive symptoms
- Suicide risk factors (HR11)
- Abnormal bereavement
- Tooth decay, malalignment, gingivitis
- Signs of child abuse and neglect

*One visit is required for immunizations. Because of lack of data and differing patient risk profiles, the scheduling of additional visits and the frequency of the individual preventive services listed in this table are left to clinical discretion (except as indicated in other footnotes).

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1. Every 1–3 years. 2. For females. 3. Often best performed early in adolescence and with the involvement of parents. 4. Especially for males. 5. Once between ages 14 and 16.

Table 5. Ages 19–39

HR1 Persons with exposure to tobacco or excessive amounts of alcohol, or those with suspicious symptoms or lesions detected through self-examination.

HR2 Persons with a history of upper-body irradiation.

HR3 Women aged 35 and older with a family history of premenopausally diagnosed breast cancer in a first-degree relative.

HR4 Men with a history of cryptorchidism, orchiopexy, or testicular atrophy.

HR5 Persons with family or personal history of skin cancer, increased occupational or recreational exposure to sunlight, or clinical evidence of precursor lesions (e.g., dysplastic nevi, certain congenital nevi).

HR6 The markedly obese, persons with a family history of diabetes, or women with a history of gestational diabetes.

HR7 Women lacking evidence of immunity.

HR8 Prostitutes, persons who engage in sex with multiple partners in areas in which syphilis is prevalent, or contacts of persons with active syphilis.

HR9 Persons with diabetes.

HR10 Persons who attend clinics for sexually transmitted diseases; attend other high-risk health care facilities (e.g., adolescent and family planning clinics); or have other risk factors for chlamydial infection (e.g., multiple sexual partners or a sexual partner with multiple sexual contacts, age less than 20).

HR11 Prostitutes, persons with multiple sexual partners or a sexual partner with multiple contacts, sexual contacts of persons with culture-proven gonorrhea, or persons with a history of repeated episodes of gonorrhea.

HR12 Persons seeking treatment for sexually transmitted diseases; homosexual and bisexual men; past or present intravenous (IV) drug users; persons with a history of prostitution or multiple sexual partners; women whose past or present sexual partners were HIV-infected, bisexual, or IV drug users; persons with long-term residence or birth in an area with high prevalence of HIV infection; or persons with a history of transfusion between 1978 and 1985.

HR13 Persons exposed regularly to excessive noise.

HR14 Household members of persons with tuberculosis or others at risk for close contact with the disease (e.g., staff of tuberculosis clinics, shelters for the homeless, nursing homes, substance abuse treatment facilities, dialysis units, correctional institutions); recent immigrants or refugees from countries in which tuberculosis is common; migrant workers; residents of nursing homes, correctional institutions, or homeless shelters; or persons with certain underlying medical disorders (e.g., HIV infection).

HR15 Men who would endanger public safety were they to experience sudden cardiac events (e.g., commercial airline pilots).

HR16 Persons with a family history of familial polyposis coli or cancer family syndrome.

HR17 Recent divorce, separation, unemployment, depression, alcohol or other drug abuse, serious medical illnesses, living alone, or recent bereavement.

HR18 Intravenous drug users.

HR19 Persons at increased risk for low back injury because of past history, body configuration, or type of activities.

HR20 Persons with children in the home or automobile.

HR21 Persons with older adults in the home.

HR22 Young adults of Caribbean, Latin American, Asian, Mediterranean, or African descent.

HR23 Persons with increased exposure to sunlight.

HR24 Homosexually active men, intravenous drug users, recipients of some blood products, or persons in health-related jobs with frequent exposure to blood or blood products.

HR25 Persons with medical conditions that increase the risk of pnenumococcal infection (e.g., chronic cardiac or pulmonary disease, sickle cell disease, nephrotic syndrome, Hodgkin's disease, asplenia, diabetes mellitus, alcoholism, cirrhosis, multiple myeloma, renal disease, or conditions associated with immunosuppression).

HR26 Residents of chronic care facilities or persons suffering from chronic cardiopulmonary disorders, metabolic diseases (including diabetes mellitus), hemoglobinopathies, immunosuppression, or renal dysfunction.

HR27 Persons born after 1956 who lack evidence of immunity to measles (receipt of live vaccine on or after first birthday, laboratory evidence of immunity, or a history of physician-diagnosed measles).

Table 5.

Ages 19–39

Schedule: Every 1–3 Years*

Leading Causes of Death:

- Motor vehicle crashes
- Homicide
- Suicide
- Injuries (nonmotor vehicle)
- Heart disease

SCREENING

History

- Dietary intake
- Physical activity
- Tobacco/alcohol/drug use
- Sexual practices

Physical Exam

- Height and weight
- Blood pressure

HIGH-RISK GROUPS

- Complete oral cavity exam (HR1)
- Palpation for thyroid nodules (HR2)
- Clinical breast exam (HR3)
- Clinical testicular exam (HR4)
- Complete skin exam (HR5)

Laboratory/Diagnostic Procedures

- Nonfasting total blood cholesterol
- Papanicolaou smear[1]

HIGH-RISK GROUPS

- Fasting plasma glucose (HR6)
- Rubella antibodies (HR7)
- VDRL/RPR (HR8)
- Urinalysis for bacteriuria (HR9)
- Chlamydial testing (HR10)
- Gonorrhea culture (HR11)
- Counseling and testing for HIV (HR12)
- Hearing (HR13)
- Tuberculin skin test (PPD) (HR14)
- Electrocardiogram (HR15)
- Mammogram (HR3)
- Colonoscopy (HR16)

COUNSELING

Diet and Exercise

- Fat (especially saturated fat), cholesterol, complex carbohydrates, fiber, sodium, iron[2], calcium[2]
- Caloric balance
- Selection of exercise program

Substance Use

- Tobacco: cessation/primary prevention
- Alcohol and other drugs:
  - Limiting alcohol consumption
  - Driving/other dangerous activities while under the influence
  - Treatment for abuse

HIGH-RISK GROUPS

- Sharing/using unsterilized needles and syringes (HR18)

Sexual Practices

- Sexually transmitted diseases: partner selection, condoms, anal intercourse
- Unintended pregnancy and contraceptive options

Injury Prevention

- Safety belts
- Safety helmets
- Violent behavior[3]
- Firearms[3]
- Smoke detector
- Smoking near bedding or upholstery

HIGH-RISK GROUPS

- Back-conditioning exercises (HR19)
- Prevention of childhood injuries (HR20)
- Falls in the elderly (HR21)

Dental Health

- Regular tooth brushing, flossing, dental visits

Other Primary Preventive Measures

HIGH-RISK GROUPS

- Discussion of hemoglobin testing (HR22)
- Skin protection from ultraviolet light (HR23)

IMMUNIZATIONS

- Tetanus-diphtheria (Td) booster[4]

HIGH-RISK GROUPS

- Hepatitis B vaccine (HR24)
- Pneumococcal vaccine (HR25)
- Influenza vaccine[5] (HR26)
- Measles-mumps-rubella vaccine (HR27)

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- Chronic obstructive pulmonary disease
- Hepatobiliary disease
- Bladder cancer
- Endometrial disease
- Travel-related illness
- Prescription drug abuse
- Occupational illness and injuries

Remain Alert For:

- Depressive symptoms
- Suicide risk factors (HR17)
- Abnormal bereavement
- Malignant skin lesions
- Tooth decay, gingivitis
- Signs of physical abuse

*The recommended schedule applies only to the periodic visit itself. The frequency of the individual preventive services listed in this table is left to clinical discretion, except as indicated in other footnotes.

1. Every 1–3 years. 2. For women. 3. Especially for young males. 4. Every 10 years. 5. Annually.

Table 6. Ages 40–64 High-Risk Categories

HR1 Persons with a family or personal history of skin cancer, increased occupational or recreational exposure to sunlight, or clinical evidence of precursor lesions (e.g., dysplastic nevi, certain congenital nevi).

HR2 Persons with exposure to tobacco or excessive amounts of alcohol, or those with suspicious symptoms or lesions detected through self-examination.

HR3 Persons with a history of upper-body irradiation.

HR4 Persons with risk factors for cerebrovascular or cardiovascular disease (e.g., hypertension, smoking, CAD, atrial fibrillation, diabetes) or those with neurologic symptoms (e.g., transient ischemic attacks) or a history of cerebrovascular disease.

HR5 The markedly obese, persons with a family history of diabetes, or women with a history of gestational diabetes.

HR6 Prostitutes, persons who engage in sex with multiple partners in areas in which syphilis is prevalent, or contacts of persons with active syphilis.

HR7 Persons with diabetes.

HR8 Persons who attend clinics for sexually transmitted diseases, attend other high-risk health care facilities (e.g., adolescent and family planning clinics), or have other risk factors for chlamydial infection (e.g., multiple sexual partners or a sexual partner with multiple sexual contacts).

HR9 Prostitutes, persons with multiple sexual partners or a sexual partner with multiple contacts, sexual contacts of persons with culture-proven gonorrhea, or persons with a history of repeated episodes of gonorrhea.

HR10 Persons seeking treatment for sexually transmitted diseases; homosexual and bisexual men; past or present intravenous (IV) drug users; persons with a history of prostitution or multiple sexual partners; women whose past or present sexual partners were HIV-infected, bisexual, or IV drug users; persons with long-term residence or birth in an area with high prevalence of HIV infection; or persons with a history of transfusion between 1978 and 1985.

HR11 Household members of persons with tuberculosis or others at risk for close contact with the disease (e.g., staff of tuberculosis clinics, shelters for the homeless, nursing homes, substance abuse treatment facilities, dialysis units, correctional institutions); recent immigrants or refugees from countries in which tuberculosis is common (e.g., Asia, Africa, Central and South America, Pacific Islands); migrant workers; residents of nursing homes, correctional institutions, or homeless shelters; or persons with certain underlying medical disorders (e.g., HIV infection).

HR12 Persons exposed regularly to excessive noise.

HR13 Men with two or more cardiac risk factors (high blood cholesterol, hypertension, cigarette smoking, diabetes mellitus, family history of CAD); men who would endanger public safety were they to experience sudden cardiac events (e.g., commercial airline pilots); or sedentary or high-risk males planning to begin a vigorous exercise program.

HR14 Persons aged 50 and older who have first-degree relatives with colorectal cancer; a personal history of endometrial, ovarian, or breast cancer; or a previous diagnosis of inflammatory bowel disease, adenomatous polyps, or colorectal cancer.

HR15 Persons with a family history of familial polyposis coli or cancer family syndrome.

HR16 Perimenopausal women at increased risk for osteoporosis (e.g., Caucasian race, bilateral oopherectomy before menopause, slender build) and for whom estrogen replacement therapy would otherwise not be recommended.

HR17 Recent divorce, separation, unemployment, depression, alcohol or other drug abuse, serious medical illnesses, living alone, or recent bereavement.

HR18 Persons over age 50, smokers, or persons with diabetes mellitus.

HR19 Intravenous drug users.

HR20 Persons at increased risk for low back injury because of past history, body configuration, or type of activities.

HR21 Persons with children in the home or automobile.

HR22 Persons with older adults in the home.

HR23 Persons with increased exposure to sunlight.

HR24 Men who have risk factors for myocardial infarction (e.g., high blood cholesterol, smoking, diabetes mellitus, family history of early-onset CAD) and who lack a history of gastrointestinal or other bleeding problems, and other risk factors for bleeding or cerebral hemorrhage.

HR25 Perimenopausal women at increased risk for osteoporosis (e.g., Caucasian, low bone mineral content, bilateral oopherectomy before menopause or early menopause, slender build) and who are without known contraindications (e.g., history of undiagnosed vaginal bleeding, active liver disease, thromboembolic disorders, hormone-dependent cancer).

HR26 Homosexually active men, intravenous drug users, recipients of some blood products, or persons in health-related jobs with frequent exposure to blood or blood products.

HR27 Persons with medical conditions that increase the risk of pneumococcal infection (e.g., chronic cardiac or pulmonary disease, sickle cell disease, nephrotic syndrome, Hodgkin's disease, asplenia, diabetes mellitus, alcoholism, cirrhosis, multiple myeloma, renal disease or conditions associated with immunosuppression).

HR28 Residents of chronic care facilities and persons suffering from chronic cardiopulmonary disorders, metabolic diseases (including diabetes mellitus), hemoglobinopathies, immunosuppression, or renal dysfunction.

Table 6.

Ages 40–64

Schedule: Every 1–3 Years*

Leading Causes of Death:

- Heart disease
- Lung cancer
- Cerebrovascular disease
- Breast cancer
- Colorectal cancer
- Obstructive lung disease

SCREENING

History

- Dietary intake
- Physical activity
- Tobacco/alcohol/drug use
- Sexual practices

Physical Exam

- Height and weight
- Blood pressure
- Clinical breast exam[1]

HIGH-RISK GROUPS

- Complete skin exam (HR1)
- Complete oral cavity exam (HR2)
- Palpation for thyroid nodules (HR3)
- Auscultation for carotid bruits (HR4)

Laboratory/Diagnostic Procedures

- Nonfasting total blood cholesterol
- Papanicolaou smear[2]
- Mammogram[3]

HIGH-RISK GROUPS

- Fasting plasma glucose (HR5)
- VDRL/RPR (HR6)
- Urinalysis for bacteriuria (HR7)
- Chlamydial testing (HR8)
- Gonorrhea culture (HR9)
- Counseling and testing for HIV (HR10)
- Tuberculin skin test (PPD) (HR11)
- Hearing (HR12)
- Electrocardiogram (HR13)
- Fecal occult blood/sigmoidoscopy (HR14)
- Fecal occult blood/colonoscopy (HR15)
- Bone mineral content (HR16)

COUNSELING

Diet and Exercise

- Fat (especially saturated fat), cholesterol, complex carbohydrates, fiber, sodium, calcium[4]
- Caloric balance
- Selection of exercise program

Substance Use

- Tobacco cessation
- Alcohol and other drugs:
  - Limiting alcohol consumption
  - Driving/other dangerous activities while under the influence
  - Treatment for abuse

HIGH-RISK GROUPS

- Sharing/using unsterilized needles and syringes (HR19)

Sexual Practices

- Sexually transmitted diseases; partner selection, condoms, anal intercourse
- Unintended pregnancy and contraceptive options

Injury Prevention

- Safety belts
- Safety helmets
- Smoke detector
- Smoking near bedding or upholstery

HIGH-RISK GROUPS

- Back-conditioning exercises (HR20)
- Prevention of childhood injuries (HR21)
- Falls in the elderly (HR22)

Dental Health

- Regular tooth brushing, flossing, and dental visits

Other Primary Preventive Measures

HIGH-RISK GROUPS

- Skin protection from ultraviolet light (HR23)
- Discussion of aspirin therapy (HR24)
- Discussion of estrogen replacement therapy (HR25)

IMMUNIZATIONS

- Tetanus-diphtheria (Td) booster[5]

HIGH-RISK GROUPS

- Hepatitis B vaccine (HR26)
- Pneumococcal vaccine (HR27)
- Influenza vaccine (HR28)[6]

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- Chronic obstructive pulmonary disease
- Hepatobiliary disease
- Bladder cancer
- Endometrial disease
- Travel-related illness
- Prescription drug abuse
- Occupational illness and injuries

Remain Alert For:

- Depressive symptoms
- Suicide risk factors (HR17)
- Abnormal bereavement
- Signs of physical abuse or neglect
- Malignant skin lesions
- Peripheral arterial disease (HR18)
- Tooth decay, gingivitis, loose teeth

*The recommended schedule applies only to the periodic visit itself. The frequency of the individual preventive services listed in this table is left to clinical discretion, except as indicated in other footnotes.

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[1] Annually for women. [2] Every 1–3 years for women. [3] Every 1–2 years for women beginning at age 50 (age 35 for those at increased risk). [4] For women. [5] Every 10 years. [6] Annually.

Table 7. Ages 65 and Over

High-Risk Categories

HR1 Persons with risk factors for cerebrovascular or cardiovascular disease (e.g., hypertension, smoking, CAD, atrial fibrillation, diabetes) or those with neurologic symptoms (e.g., transient ischemic attacks) or a history of cerebrovascular disease.

HR2 Persons with a family or personal history of skin cancer, or clinical evidence of precursor lesions (e.g., dysplastic nevi, certain congenital nevi), or those with increased occupational or recreational exposure to sunlight.

HR3 Persons with exposure to tobacco or excessive amounts of alcohol, or those with suspicious symptoms or lesions detected through self-examination.

HR4 Persons with a history of upper-body irradiation.

HR5 The markedly obese, persons with a family history of diabetes, or women with a history of gestational diabetes.

HR6 Household members of persons with tuberculosis or others at risk for close contact with the disease (e.g., staff of tuberculosis clinics, shelters for the homeless, nursing homes, substance abuse treatment facilities, dialysis units, correctional institutions); recent immigrants or refugees from countries in which tuberculosis is common (e.g., Asia, Africa, Central and South America, Pacific Islands); migrant workers; residents of nursing homes, correctional institutions, or homeless shelters; or persons with certain underlying medical disorders (e.g., HIV infection).

HR7 Men with two or more cardiac risk factors (high blood cholesterol, hypertension, cigarette smoking, diabetes mellitus, family history of CAD); men who would endanger public safety were they to experience sudden cardiac events (e.g., commercial airline pilots); or sedentary or high-risk males planning to begin a vigorous exercise program.

HR8 Women who have not had previous documented screening in which smears have been consistently negative.

HR9 Persons who have first-degree relatives with colorectal cancer; a personal history of endometrial, ovarian, or breast cancer; or a previous diagnosis of inflammatory bowel disease, adenomatous polyps, or colorectal cancer.

HR10 Persons with a family history of familial polyposis coli or cancer family syndrome.

HR11 Recent divorce, separation, unemployment, depression, alcohol or other drug abuse, serious medical illnesses, living alone, or recent bereavement.

HR12 Persons with children in the home or automobile.

HR13 Women at increased risk for osteoporosis (e.g., Caucasian, low bone mineral content, bilateral oopherectomy before menopause or early menopause, slender build) and who are without known contraindications (e.g., history of undiagnosed vaginal bleeding, active liver disease, thromboembolic disorders, hormone-dependent cancer).

HR14 Men who have risk factors for myocardial infarction (e.g., high blood cholesterol, smoking, diabetes mellitus, family history of early-onset CAD) and who lack a history of gastrointestinal or other bleeding problems, or other risk factors for bleeding or cerebral hemorrhage.

HR15 Persons with increased exposure to sunlight.

HR16 Homosexually active men, intravenous drug users, recipients of some blood products, or persons in health-related jobs with frequent exposure to blood or blood products.

Table 7.
Ages 65 and Over
Schedule: Every Year*

Leading Causes of Death:
- Heart disease
- Cerebrovascular disease
- Obstructive lung disease
- Pneumonia/influenza
- Lung cancer
- Colorectal cancer

SCREENING

History
- Prior symptoms of transient ischemic attack
- Dietary intake
- Physical activity
- Tobacco/alcohol/drug use
- Functional status at home

Physical Exam
- Height and weight
- Blood pressure
- Visual acuity
- Hearing and hearing aids
- Clinical breast exam[1]

HIGH-RISK GROUPS
- Auscultation for carotid bruits (HR1)
- Complete skin exam (HR2)
- Complete oral cavity exam (HR3)
- Palpation of thyroid nodules (HR4)

Laboratory/Diagnostic Procedures
- Nonfasting total blood cholesterol
- Dipstick urinalysis
- Mammogram[2]
- Thyroid function tests[3]

HIGH-RISK GROUPS
- Fasting plasma glucose (HR5)
- Tuberculin skin test (PPD) (HR6)
- Electrocardiogram (HR7)
- Papanicolaou smear[4] (HR8)
- Fecal occult blood/Sigmoidoscopy (HR9)
- Fecal occult blood/Colonoscopy (HR10)

COUNSELING

Diet and Exercise
- Fat (especially saturated fat), cholesterol, complex carbohydrates, fiber, sodium, calcium[3]
- Caloric balance
- Selection of exercise program

Substance Use
- Tobacco cessation
- Alcohol and other drugs:
  - Limiting alcohol consumption
  - Driving/other dangerous activities while under the influence
  - Treatment for abuse

Injury Prevention
- Prevention of falls
- Safety belts
- Smoke detector
- Smoking near bedding or upholstery
- Hot water heater temperature
- Safety helmets

HIGH-RISK GROUPS
- Prevention of childhood injuries (HR12)

Dental Health
- Regular dental visits, tooth brushing, flossing

Other Primary Preventive Measures
- Glaucoma testing by eye specialist

HIGH-RISK GROUPS
- Discussion of estrogen replacement therapy (HR13)
- Discussion of aspirin therapy (HR14)
- Skin protection form ultraviolet light (HR15)

IMMUNIZATIONS
- Tetanus-diphtheria (Td) booster[5]
- Influenza vaccine[1]
- Pneumococcal vaccine

HIGH-RISK GROUPS
- Hepatitis B vaccine (HR16)

This list of preventive services is not exhaustive. It reflects only those topics reviewed by the U.S. Preventive Services Task Force. Clinicians may wish to add other preventive services on a routine basis, and after considering the patient's medical history and other individual circumstances. Examples of target conditions not specifically examined by the Task Force include:
- Chronic obstructive pulmonary disease
- Hepatobiliary disease
- Bladder cancer
- Endometrial disease
- Travel-related illness
- Prescription drug abuse
- Occupational illness and injuries

Remain Alert For:
- Depression symptoms
- Suicide risk factors (HR11)
- Abnormal bereavement
- Changes in cognitive function
- Medications that increase risk of falls
- Signs of physical abuse or neglect
- Malignant skin lesions
- Peripheral arterial disease
- Tooth decay, gingivitis, loose teeth

*The recommended schedule applies only to the periodic visit itself. The frequency of the individual preventive services listed in this table is left to clinical discretion, except as indicated in other footnotes.

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1. Annually. 2. Every 1–2 years for women until age 75, unless pathology detected. 3. For women. 4. Every 1–3 years. 5. Every 10 years.

Table 8. Pregnant Women

High-Risk Categories

HR1 Black women.

HR2 Women lacking evidence of immunity (proof of vaccination after the first birthday or laboratory evidence of immunity.)

HR3 Women who attend clinics for sexually transmitted diseases, attend other high-risk health care facilities (e.g., adolescent and family planning clinics), or have other risk factors for chlamydial infection (e.g., multiple sexual partners or a sexual partner with multiple sexual contacts).

HR4 Women seeking treatment for sexually transmitted diseases; past or present intravenous (IV) drug users; women with a history of prostitution or multiple sexual partners; women whose past or present sexual partners were HIV-infected, bisexual, or IV drug users; women with long-term residence or birth in an area with high prevalence of HIV infection in women; or women with a history of transfusion between 1978 and 1985.

HR5 Women aged 35 and older.

HR6 Women who continue to smoke during pregnancy.

HR7 Women with excessive alcohol consumption during pregnancy.

HR8 Women with uncertain menstrual histories or risk factors for intrauterine growth retardation (e.g., hypertension, renal disease, short maternal stature, low prepregnancy weight, failure to gain weight during pregnancy, smoking, alcohol and other drug abuse, and history of a previous fetal death or growth-retarded baby).

HR9 Unsensitized Rh-negative women.

HR10 Women with multiple sexual partners or a sexual partner with multiple contacts, or sexual contacts of persons with culture-proven gonorrhea.

HR11 Women who engage in sex with multiple partners in areas in which syphilis is prevalent, or contacts of persons with active syphilis.

HR12 Women who engage in high-risk behavior (e.g., intravenous drug use) or in whom exposure to hepatitis B during pregnancy is suspected.

HR13 Women at high risk (see HR4) who have a nonreactive HIV test at the first prenatal visit.

HR14 Women with risk factors for intrauterine growth retardation (see HR8).

Table 8.

Pregnant Women[1]

FIRST PRENATAL VISIT

SCREENING

History

Genetic and obstetric history
Dietary intake
Tobacco/alcohol/drug use
Risk factors for intrauterine growth retardation and low birthweight
Prior genital herpetic lesions

Laboratory/Diagnostic Procedures

Blood pressure
Hemoglobin and hematocrit
ABO/Rh typing
Rh(D) and other antibody screen
VDRL/RPR
Hepatitis B surface antigen (HBsAg)
Urinalysis for bacteriuria
Gonorrhea culture

HIGH-RISK GROUPS

- Hemoglobin electrophoresis (HR1)
- Rubella antibodies (HR2)
- Chlamydial testing (HR3)
- Counseling and testing for HIV (HR4)

COUNSELING

Nutrition
Tobacco use
Alcohol and other drug use
Safety belts

HIGH-RISK GROUPS

- Discuss amniocentesis (HR5)
- Discuss risks of HIV infection (HR4)

Remain Alert For:

- Signs of physical abuse

This list of preventive services is not exhaustive. It reflects only those topics reviewed by the U.S. Preventive Services Task Force. Clinicians may wish to add other preventive services on a routine basis, and after considering the patient's medical history and other individual circumstances. Examples of target conditions not specifically examined by the Task Force include:

- Counseling on warning signs and symptoms
- Physical findings of abdominal and cervical examination
- Tay-Sachs disease
- Childbirth education
- Teratogenic and fetotoxic exposures

FOLLOW-UP VISITS

Schedule: See Footnote*

SCREENING

Blood pressure
Urinalysis for bacteriuria

Screening Tests at Specific Gestational Ages

14–16 Weeks:

- Maternal serum alpha-fetoprotein (MSAFP)[2]
- Ultrasound cephalometry (HR8)

24–28 Weeks:

- 50 g oral glucose tolerance test
- Rh(D) antibody (HR9)
- Gonorrhea culture (HR10)
- VDRL/RPR (HR11)
- Hepatitis B surface antigen (HBsAg) (HR12)
- Counseling and testing for HIV (HR13)

36 Weeks:

- Ultrasound exam (HR14)

COUNSELING

Nutrition
Safety belts
Discuss meaning of upcoming tests

HIGH-RISK GROUPS

- Tobacco use (HR6)
- Alcohol and other drug use (HR7)

Remain Alert For:

- Signs of physical abuse

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1. See also Tables 4–6 for other preventive services for women.
2. Women with access to counseling and follow-up services, skilled high-resolution ultrasound and amniocentesis capabilities, and reliable, standardized laboratories.

*Because of lack of data and differing patient risk profiles, the scheduling of visits and the frequency of the individual preventive services listed in this table are left to clinical discretion, except for those indicated at specific gestational ages.

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